

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 PER 10,0c
1. Edition

En

Testoil-ISO 4113

PES 8 MW 100/720 RS 1019 RQV 500-1200 MW 29
0 403 448 106

supersedes
company Perkins
engine TV 8.640 6R
185 kW (252 PS)

1 - 8 - 7 - 5 - 4 - 3 - 6 - 2
0 - 45 - 90 - 135 - 180 - 225 - 270 - 315 ± 0,05(0,75)

+ Port-closing mark on rear side

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 mm (from BDC) RW 9,0-12,0 mm
(2,95-3,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1180	12,2+0,1	9,9 - 10,1	0,35(0,6)			
500	5,8-6,0	0,95 - 1,35	0,35(0,55)			
800	12,2+0,1		0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 14	500	5,8-6,0		
	1400	0,1-1,0					100	min.7,5		
ca. 64	11,2	1220-1225					660-720	= 2,0		
	4,0	1255-1260				③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5b)		Starting fuel delivery idle switching point (6)	Torque-control travel (5) Control rod travel mm		
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1180	99,0-101,0 (97,0-103,0)	1220 - 1225+	800	93,0-97,0 (91,0-99,0)	100	19,0-21,0RW min.140,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.84

A1

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AA

Port closing and TDC markings

Comb. - No.
... 106

°camshaft between port closing and TDC
at control-rod travel 10,5 mm
15°

En

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 4,5 e

1. Edition

En

Testoil-ISO 4113

PES 4 MW 100/320 RS 1102
0 403 444 107

RQV 300-1100 MW 39-5

 supersedes
 company Volvo
 engine D 45
 85 kW

 1-3 - 4 - 2
 0-90-180-270 \pm 0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\frac{2,80-2,90}{(2,75-2,95)}$ mm (from BDC) bei RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,1+0,1	11,3-115	0,35(0,6)			
300	5,8-5,9	1,3-1,7	0,35(0,55)			
1000	12,1+0,1		0,55(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed				Intermediate rated speed				Lower rated speed			Sliding sleeve travel			
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	1a 2a	Degree of deflection of control lever	rev/min	Control rod travel mm	4	Degree of deflection of control lever	rev/min	Control rod travel mm	3	rev/min	mm	1
1	2	3		4	5	6		7	8	9		10	11	
max.	1200 1350	15,2-17,8 0 - 1,0						ca. 10	300 100	5,6-5,7 min. 8,1				
ca. 43	11,1 4,0	1140-1150 1210-1240						3a	320-650					

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b ④a	Fuel delivery characteristics high idle speed ⑤b ⑤a		Starting fuel delivery idle switching point ⑥	Torque-control travel ⑤ Control rod travel mm		
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
700	113,0-115,0 (111,0-117,0)	1140-1150*	1000	112,0-116,0 (110,0-118,0)	100	19,0-21,0 mm RW 130,0-140,0 (127,0-143,0)		
					300	13,0-17,0 (10,5-19,5)		
					100-220	(80-250)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

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Test Specifications Fuel Injection Pumps (1A) and Governors

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WPP 001/4 VOL 4,5 g

1. Edition

En

Testoil-ISO 4113

PES 4 MW 100/320 RS 1102
RSV 300-1000 MW 1 A 315
0 403 474 001

supersedes
company Volvo
TD 45
engine 84 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,80-2,90$
(2,75-2,95) mm (from BDC) bei RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,1+0,1	11,3-11,5	0,35(0,6)			
300	5,6-5,7	1,3-1,7	0,35(0,55)			
1000	12,1+0,1		0,55(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca. 12	300	5,1-5,2		
ca. 52	11,1	1040-1050					300	5,6-5,7		
2a	4,0	1055-1085					360-420	=2,0		
	0,3-1,7	1200								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop		(6) Rotational-speed limit		(3a) Fuel delivery characteristics		Starting fuel delivery (5)		(4a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
700	113,0-115,0 (111,0-117,0)	1040-1050*	1000	112,0-116,0 (110,0-118,0)	300	13,0-17,0 (10,5-19,5)	300	5,6-5,7	

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 13,4 a

1. Edition

En

PE 8 MW 100/720 LS 1118

RQV 300-1150 MW 56

0 403 548 007

1- 8- 7- 2 - 6 - 5 - 4 - 3

0-45-90-135-180-225-270-315 \pm 0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes

company: KHD

engine: BF 8 L 513

222 kW

A. Fuel Injection Pump Settings

Port closing at prestroke $3,10-3,20$ mm (from BDC) $RW = 9,0-12,0$ mm
(3,05-3,25)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,5+0,1	13,3-13,5	0,35(0,6)			
300	6,7-6,8	1,6-2,0	0,35(0,55)			
1150	11,9+0,1		0,5 (0,7)			
450	11,4+0,1					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1175 1400	15,2-17,8 0-1				ca. 18	300	6,7-6,8		
ca. 55	10,9 4,0	1190-1200 1270-1300					320-460			

Torque control travel a = 0,6 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 700	0,8 bar 133,0-135,0 (131,0-137,0)	1190-1200*	LDA 1150	0,8 bar 129,0-131,0 (126,0-134,0)	100	19,0-21,0 mm RW 140-150	1000 750 900	11,9+0, 12,5+0, 12,1+0,2
			LDA 450	0 bar 104,0-106,0 (102,0-108,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

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D. Adjustment Test for Manifold Pressure Compensator

KHD 13,4 a -2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
Pump LS 1118 with MW 56	0,8	0,36 0,26 0	12,5-12,6 12,2-12,3 11,6-11,7 11,4-11,5

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

②

Test Specifications Fuel Injection Pumps ② and Governors

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WPP 001/4 MB 11,8 e

7. Edition

En

PE 6 P 100 A 720 RS 15 RQ 250/1100 PA 269 R (1)

Komb.-Nr. 0 401 846 329 (1)

PA 278 R* (2)

0 401 846 331 (2)

supersedes 3.83

company: Daimler-Benz

engine: OM 355

* 278 R -

Functional check of roll-start block: Adjust solenoid until control rod is 1;5-2,5 mm from stop.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 mm (from BDC) RW 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	13,0+0,1	11,9-12,1	0,3(0,6)			
250	7,4-7,6	1,7-2,3	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point ④				Idle speed regulation Setting point ⑤				Torque control ③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,6-16,4	600	16,0	12,0 4,0 1350	1125-1145 1195-1230 0-1,5	250	5,0	100 250 385-425 = 2,0	min. 7,0 5,9-6,1	-	-

Torque-control travel on flyweight assembly dimension a = mmSpeed regulation: At 1125-1145 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes/mm
1	2	3	4	5	6	7
1100	118,5-120,5 (116,5-122,5)	450	450	101,0-105,0 (99,0-107,0)	100	140,0-160,0 (136,0-164,0)

Checking values in brackets

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Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4 KHD 36,6 a

1. Edition

En

PE 8 P 100/900/5 RS 114 (1)
PE 8 P 100/900/5 RS 115 (2)
PE 8 P 100/920/5 RS 115 RSUV 300-750 P 9/322 R (3)
Cam sequence and angular cam spacing, Instructions 2
Note VDT-I-401/ 103

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes
company KHD
F 16 M 716
Komb.-Nr. 0 401 818 006 (1)
0 401 818 008 (2)
0 401 878 033 (3)

A. Fuel Injection Pump Settings

Port closing at prestroke 2.0-2,1
(1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 68	750 770 800	16,0 12,5 6,2	without auxiliary spring			ca. 31	300	8,0	730	0
							60	19-21	400	0
			with auxiliary spring				300	7,7-8,3	320	1,2-1,8
							350	4,6-6,2		
							470	0		
②a	785 800 820	7,4-10,4 4,8-7,8 1,8-4,8								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤ Idle		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min							
rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5		6	7	8	9
Pumps run in tandem						-	-	-	-
Take full-load delivery from VDT-I-401/103									

Checking values in brackets

* 1 mm less control rod travel than col 2

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Cam sequence and angular cam spacing.

PE 8 P..RS 114:

1- 8- 4- 7- 3 - 6 - 5 - 2
0-30-75-90-135-165-225-300° \pm 0,5° (\pm 0,75°)

PE 8 P..RS 115:

1- 5- 4- 3 - 8 - 7 - 2 - 6
0-45-75-135-210-270-300-345° \pm 0,5° (\pm 0,75°)

Test Specifications Fuel Injection Pumps (1A) and Governors

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WPP 001/4 KHD 36,6 a 1

1. Edition

En

PE 8 P 100 A 900/5 RS 114 (1)
PE 8 P 100 A 920/5 RS 115 RSUV 300-750 P 9/322 R (2)

superseded by KHD
company F 16 M 716
engine

Cam sequence and angular cam spacing, Instructions 2

Note VDT-I-401/ 103

Komb.-Nr. 0 401 818 011 (1)
0 401 878 046 (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 mm (from BDC)
(1,95-2,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 68	750 770 800	16,0 12,5 6,2	without auxiliary spring			ca. 31	300 60 300 350 470	8,0 19-21 7,7-8,3 4,6-6,2 0	730 400 320	0 0 1,2-1,8
2a	785 800 820	7,4-10,4 4,8-7,8 1,8-4,8								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min				idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	
Pumps run in tandem Take full-load delivery from VDT-I-401/103						-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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A10

Cam sequence and angular cam spacing.

PE 8 P..RS 114:

1- 8- 4- 7- 3 - 6 - 5 - 2
0-30-75-90-135-165-225-300° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

PE 8 P..RS 115:

1- 5- 4- 3 - 8 - 7 - 2 - 6
0-45-75-135-210-270-300-345° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

Test Specifications Fuel Injection Pumps (1A) and Governors

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WPP 001/4 KHD 36,6 a 3

1. Edition

En

PE 8 P 110 A 900/5 RS 114 (1)

PE 8 P 110 A 920/5 RS 115 RSUV 300-750 P 9 A 322 R (2)

Values only apply to test nozzle-and-holder

assembly 0 681 443 022 and fuel-injection test

tubing 1 680 750 060

supersedes KHD

company F 16 M 716

Komb.-Nr.: 0 401 818 012 (1)

0 401 878 077 (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,0-2,1
(1,95-2,15)

Cam sequence and angular cam spacing, Instructions 2
mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1000	12,0	18,8-19,6	0,8			
600	6,0	3,4-4,4				
600	12,0	18,2-19,5				
600	15,0	26,7-28,4				
200	6,0	0,9-1,9				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 68	750 770 800	16,0 12,5 6,2	without auxiliary spring			ca. 31	300	8,0	730 400 320	0 0 1,2-1,8
2a	785 800 820	7,4-10,4 4,8-7,8 1,8-4,8					50 300 350 400	19-21 7,7-8,3 1,4-4,2 0-1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
Pumps run in tandem Take full-load delivery from VDT-I-401/103									

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

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Cam sequence and angular spacing:

PE 8 P..RS 114:

1- 8- 4- 7- 3 - 6 - 5 - 2
0-30-75-90-135-165-225-300° $\pm 0,5^\circ$ ($\pm 0,75$)

PE 8 P..RS 115:

1- 5- 4- 3 - 8 - 7 - 2 - 6
0-45-75-135-210-270-300-345° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

Note VDT-I-401/103!

En

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

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WPP 001/4 KHD 36,6 a 4

1. Edition

En

PE 8 P 110 A 920/5 RS 115 RSUV 300-750 P 9/322 R
1-5-4-3-8-7-2-6

0-45-75-135-210-270-300-345° ± 0,5° (± 0,75°)

Values only apply to test nozzle-and-holder
assembly 0 681 443 022 and fuel-injection test
tubing 1 680 750 060

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes-

company KHD

engine F 16 M 716

Komb.-Nr. 0 401 878 080

Note VDT-I-401/103

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1000	12,0	18,4-19,6	0,8			
600	6,0	3,4-4,4				
600	12,0	18,2-19,5				
600	15,0	26,7-28,4				
200	6,0	0,9-1,9				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 68	750 770 800	16,0 12,5 6,2	without auxiliary spring			ca. 31	300	8,0	730 400 320	0 0 1,2-1,8
2a	785 800 820	7,4-10,4 4,8-7,8 1,8-4,8					50 300 350 400	19-21 7,7-8,3 1,4-4,2 0-1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	

Pump runs in tandem with PE 8 P 100/900/5 RS 114 - 0 401 818 012
Take full-load delivery from VDT-I-401/103

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

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Test Specifications Fuel Injection Pumps (1A) and Governors

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WPP 001/4 KHD 36,6 b

1. Edition

En

PE 8 P 100/920/5 RS 115 RSUV 300-900 P0/327R

Komb.-Nr. 0 401 878 036

1- 5- 4- 3 - 8 - 7 - 2 - 6

0-45-75-135-210-270-300-345° ± 0,5° (± 0,75°)

Note VDT-I-401/ 103

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes -

company KHD

engine F 16 M 716

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1
(1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 65	900	16,0	without auxoliary spring			ca. 23	300	8,0	880 500 330	0 0 1,2-1,8
	930	10,5								
	950	6,0								
	with auxiliary spring			70	19-21					
930				9,5-12,0	300	7,7-8,3				
960				4,2-6,7	350	3,5-5,5				
②a	1050	0-1,0				440	0-1,0			

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational speed limit Note changed to 1 rev/min 3		3a Fuel delivery characteristics rev/min cm ³ /1000 strokes 4 5		Starting fuel delivery Idle rev/min cm ³ /1000 strokes 6 7		4a Idle stop rev/min Control rod travel mm 8 9	
Pump	runs in tandem with PE 8 P 100/900/5 RS 114 - 0								
Take	full-load delivery from VDT-I-401/103								

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 36,6 b 1

1. Edition

En

PE 8 P 100 A 920/5 RS 115 RSUV 300-900 PO/327R
Komb.-Nr. 0 401 878 047
1- 5- 4- 3 - 8 - 7 - 2 - 6
0-45-75-135-210-270-300-345° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)
Note VDT-I-401/ 103

supersedes -
company KHD
engine F 16 M 716

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,1$
(1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 65	900 930 950	16,0 10,5 6,0	without auxiliary spring			ca. 23	300	8,0	880 500 330	0 0 1,2-1,8
②a	930 960 1050	9,5-12,0 4,2-6,7 0-1,0					70 300 350 440	19-21 7,7-8,3 3,5-5,5 0-1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp 40° C (104° F)		Note changed to) rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
rev/min 1	cm ³ /1000 strokes 2	3		4	5	6	7	8	9
						-	-	-	-

Pump runs in tandem with PE 8 P 100/900/5 RS 114 - 0 401 818 011
Take full-load delivery from VDT-I-401/103

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

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Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4 KHD 36,6 c

1. Edition

En

PE 8 P 100/920/5 RS 115 RSUV 300-600 P 8/322 R
Komb.-Nr. 0 401 878 041
1- 5- 4 - 3 - 8 - 7 - 2 - 6
0-45-75 -135-210-270-300-345° ± 0,5° (± 0,75°)
Note VDT-I-401/ 103

supersedes -
company KHD
F 16 M 716
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1
(1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 68	600 620 635	16,0 10,4 6,0	without auxiliary spring			ca. 34	300	8,0	580 350 320	0 0 1,2-1,8
②a	620 650 690	9,0-10,6 2,0-4,8 0-1,0					60 300 320 360	19-21 7,7-8,3 4,5-6,3 0-1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
Pump runs in tandem with PE 8 P 100/900/5 RS 114 - 0 401 878 006	Take full-load delivery from VDT-I-401/103								

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 36,6 c 1

1. Edition

En

PE 8 P 100 A 920/5 RS 115 RSUV 300-600 P 8/322 R

Komb.-Nr. 0 401 878 048

1- 5- 4- 3 - 8 - 7 - 2 - 6

0-45-75-135-210-270-300-345° \pm 0,5° (\pm 0,75°)

Note VDT-I-401/ 103

supersedes KHD

company F 16 M 716

engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2,0-2,1

Port closing at prestroke

(1,95-2,15)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 68	600	16,0	without auxiliary spring			ca. 34	300	8,0	580	0
	620	10,4					60	19-21	350	0
	635	6,0					300	7,7-8,3	320	1,2-1,8
2a	620	9,0-10,6	with auxiliary spring				320	4,5-6,3		
	650	2,0-4,8					360	0-1,0		
	690	0-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
Pump runs in tandem with PE 8 P 100/900/5 RS 114 - 0 401 818 011	Take full-load delivery from VDT-I-401/103								

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

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Test Specifications Fuel Injection Pumps (1A) and Governors

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WPP 001/4 KHD 36,6 c 2

1. Edition

En

PE 8 P 100 A 920/5 RS 115 RSUV 300-600 P 8 A 322 R

Komb.-Nr. 0 401 878 088

1- 5- 4- 3 - 8 - 7 - 2 - 6

0-45-75-135-210-270-300-345° ± 0,5° (± 0,75°)

Note VDT-1-401/ 103

supersedes

KHD

company

F 16 M 716

engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2,0-2,1

Port closing at prestroke

(1,95-2,15)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 68	600	16,0	without auxiliary spring			ca. 34	300	8,0	580	0
	620	10,4					60	19-21	350	0
	635	6,0					300	7,7-8,3	320	1,2-1,8
2a	620	9,0-10,6	with auxiliary spring				320	4,5-6,3		
	650	2,0-4,8					360	0-1,0		
	690	0-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
Pump	runs in tandem with PE 8 P 100/900/5 RS 114 - 0 401 818 011								
Take	Full-load delivery from VDT-1-401/103								

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

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Test Specifications Fuel Injection Pumps 1A and Governors

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WPP 001/4 KHD 36,6 a 2

1. Edition

En

PE 8 P 100 A 920/5 RS 115 RSUV 300-750 P 9 A 322 R
Komb.-Nr. 0 401 878 069
1 - 5- 4- 3 - 8 - 7 - 2 - 6
0 -45-75-135-210-270-300-345° ± 0,5° (± 0,75°)
Note VDT-I-401/ 103

supersedes
company KHD
engine F 16 M 716

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,0-2,1}
(1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 68	750 770 800	16,0 12,5 6,2	without auxiliary spring			ca. 31	300	8,0	730 400 320	0 0 1,2-1,8
2a	785 800 820	7,4-10,4 4,8-7,8 1,8-4,8					60 300 350 470	19-21 7,7-8,3 4,6-6,2 0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5		rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
Pump	runs in tandem with PE 8 P 100/900/5 RS 114 - 0 401 818 011								
Take	full-load delivery from VDT-I-401/103								

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.84

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 36,6 b 2

1. Edition

En

PE 8 P 100 A 920/5 RS 115 RSUV 300-900 POA 327 R
Komb.-Nr. 0 401 878 070
1- 5- 4- 3 - 8 - 7 - 2 - 6
0-45-75-135-210-270-300-345° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)
Note VDT-I-401/ 103

supersedes
company KHD
engine F 16 M 716

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,1$ mm (from BDC)
(1,95-2,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 65	900 930 950	16,0 10,5 6,0	without auxiliary spring			ca. 23	300	8,0	880 500 330	0 0 1,2-1,8
②a	930 960 1050	9,5-12,0 4,2-6,7 0-1,0					70 300 350 440	19-21 7,7-8,3 3,5-5,5 0-1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp. 40 °C (104 °F)		Note changed to 1 rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	cm ³ /1000 strokes 5	6	rev/min 7	cm ³ /1000 strokes 8	rev/min 9	Control rod travel mm 10
Pump	runs in tandem with PE 8 P 100/900/5 RS 114 - 0 401 878 011								
Take	full-load delivery from VDT-I-401/103								

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.84

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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOB 7.0 a

1. Edition

En

PE 6 P 100 A 320 RS 256

RQV 250-1200 PA 212/2 R

supersedes

company Volvo-BM

engine D 70 B

Note sleeve position 36.0 mm - see WPP 001/4, suppl. 6

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	12,3 - 13,1	0,5			2,5 ± 0,1 (max. 2,2-2,9)
600	9	5,2 - 6,2				
	12	11,1 - 12,4				
	15	16,6 - 18,2				
200	9	3,2 - 4,2				

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 68	1290	15,0-18,3	-	-	-	ca. 23	120	8,3-10	1290	8,2
ca. 66	1560	0					250	6,2-8,2	-	-
	1200	15,1-18,2					350	3,3-5,4		
	1300	8,0-13,1					500	0-2,5		
	1400	0-7,3					570	0		
	1520	0				③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
700	73,0 - 75,0	1230 - 1240 1 mm RW weniger			100	230,0-270,0		
					225	10,0- 16,0		
(Sp. 2 + 5 (increase by ± 1,0 cm ³))								

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps and Governors

Testoil-ISO 4113

PE 6 P 110 A 320 RS 272 RQV 250-1200 PA 235/2R
RS 272Z 250-1200
RS 272Z 250-1250

supersedes 10.77
company Volvo
engine TD 70 E

Port-closing test with/without ROBO diaphragm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1000	12	15,3 - 16,1	0,6			2,5+0,1 ** (max. 2,2-2,9)
600	9	9,1 - 10,4				
	12	14,9 - 16,5				
	15	19,3 - 21,2				
200	9	6,7 - 7,7				

Adjust the fuel delivery from each outlet according to the values in []

** In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel Torque control travel	
Degree of deflection of control lever: 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever: 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever: 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 50	1290	15,0-18,4				ca. 13	100	8,8-11,0	350	1,4-2,0
	1560	0					200	7,1-9,9	800	4,4-4,8
ca. 45	1200	5,0-18,2					300	3,8-6,8	1290	8,2
	1300	2,2-13,3					400	0 - 3,6		
	1400	0 - 7,4					510	0	-	-
	1510	0								

Torque control travel a - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery Control rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
272 700	-LDA 0,7 bar 91,0 - 93,0	1230-1240 *	LDA 700	0 bar 70,5 - 73,5	100	165 - 205		
272Z 700	-LDA 0,7 bar 108,0 - 110,0 (increase by + 1,0 cm ³)		LDA 700	0 bar 70,5 - 73,5	250	22 - 26 Streuung max. 3,0	**	

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

250-1250

VOL 7,0 d

-2-

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 50	1320 1400 1490 1580	15,0-18,2 8,3-13,5 0- 7,3 0	-	-	-	ca. 13	100 200 375 510	8,8-11 7,0-9,7 0- 4 0	1320	8,3
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point	Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	rev/min	Control rod travel mm
1	2	3	4	5	6	7	9
See page 1		1290-1310*					

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = decreasing pressure - in bar gauge pressure
increasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel
	Gauge pressure = bar	Gauge pressure = bar	diminution difference mm
272 with 235/2R	0,33-0,35	0,19-0,25	
272Z with 235/2R	0,38-0,41	0,16-0,22	

En

Testoil-ISO 4113

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 AEC 12,0 a

1. Edition

En

PE 6 P 120 A 320 RS 298

RQV 250-1000 PA 277 R

Komb.-Nr. 0 401 846 395

supersedes

company AEC

engine TL 12/10

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke ^{3,4-3,5}
 (3,35-3,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0+0,1	20,0-20,4	0,5(0,9)			
250	7,0-7,2	1,6-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1000	15,2-17,8	-	-	-	ca. 34	100	min. 8,5	200	0,8-1,1
ca. 59	11,0 4,0 1250	1040-1050 1085-1115 0-1,0					250	7,0 - 7,2	470	3,8-4,1
							430-490	= 2,0	730	5,1-5,3
									1000	7,3

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 200,0-204,0 (197,0-207,0)	1040-1050*	LDA 1000	0 bar 187,0-191,0 (184,0-194,0)	- 250	- 16,0-20,0 (13,0-23,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

Test: oil-ISO 4113

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D. Adjustment Test for Manifold Pressure Compensator

AEC 12,0 a

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure - bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 298 + RQV..PA 277 R	0,70	0 0,31 0,29	12,0-12,1 11,3-11,4 11,8-11,9 11,4-11,6

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 AEC 12,0 a 2

1. Edition

En

PE 6 P 120 A 320 RS 298

RQV 250-1100 PA 277 R

supersedes

company AEC

engine TL 12/10

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke ^{3,4-3,5}
 (3,35-3,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	19,7-20,3	0,5			
600	9,0	8,4-9,6				
600	15,0	18,6-20,4				
200	9,0	3,3-4,3				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 61	1100	15,0-18,3	-	-	-	ca. 25	80	7,0-11,0	200	0,9-1,2
	1150	8,2-13,6					150	5,1-8,6	500	3,7-3,9
	1200	0-7,2					250	1,1-4,8	800	5,2-5,6
	1260	0					350	0	1100	7,9

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1100	0,7 bar 235,0-239,0 (233,0-241,0)	1140-1150*	LDA 1100	0 bar 210,0-215,0 (208,0-217,0)	- 250	- 13,0-23,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

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D. Adjustment Test for Manifold Pressure Compensator

AEC 12,0 a 2

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference
			mm (1)
PE 6 P..RS 298 + RQV..PA 277 R	0,45-0,48	0,36-0,41	- 0,1 - 1,1

Notes

(1) when n

rev/min and
gauge pressure -

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 AEC 12,0 a 1

1. Edition

En

PE 6 P 120 A 320 RS 298 Z RQV 250-1100 PA 277 R
Komb.-Nr. 0 401 846 389
Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes

company: AEC

engine: TL 12/10

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,4-3,5}{(3,35-3,55)}$ mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	14,0+0,1	20,0-20,2	0,5(0,9)			
250	7,7-7,9	1,6-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 34	100	min. 9,2	200	0,9-1,2
ca. 61	12,5	1140-1150					250	7,7-7,9	500	3,7-3,9
	4,0	1210-1240					420-480 = 2,0		800	5,2-5,6
	1350	0-1,0							1100	7,9

Torque control travel s = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed ②b limitation intermediate speed 4a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤ travel Control rod travel mm 9	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
LDA 1100	0,7 bar 200,0-202,0 (197,0-205,0)	1140-1150*	LDA 1100	0 bar 176,0-180,0 (174,0-182,0)	- 250	- 16,0-20,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

B5

B5

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D. Adjustment Test for Manifold Pressure Compensator

AEC 12,0 a 1

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P..RS 298 Z + RQV..PA 277 R	0,70	0 0,50 0,45	14,0-14,1 12,4-12,5 13,5-13,6 12,9-13,1

Notes

(1) when

rev/min and

gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DEE 7,6 a 1

2. Edition

En

PES 6 P 110 A 720 RS 361 US-RSV 400-1100 P 2/497
Komb.-Nr. 9 400 231 108
Use overflow valve 1 457 413 010

supersedes 10.83
company John Deere
engine 6466 A
161 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,75-2,85
(2,70-2,90) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,3+0,1	15,0-15,3	0,4(0,75)			
400	5,5-5,7	0,8-1,3	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	400	5,2	1100	11,0-11,1
ca. 48	10,0	1140-1150					100	min. 19,0	950	11,0-11,2
2a	4,0	1240-1270					400	5,6-5,8		
	1350	0,3-1,7					610-670	= 2,0		
							700	max. 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to)				Idle			
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
LDA 1100	0,9 bar 149,5-152,5 (147,0-155,0)	1140-1150*	LDA 950	0,9 bar 151,0-155,0 (148,0-158,0)	100	160,0-180,0 (156,0-184,0)	0 400	5,6	
			LDA 500	0 bar 119,5-123,5 (116,5-126,5)					

Checking values in brackets

* 1 mm less control rod travel than col 2

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7.84

Test ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

DEE 7,6 a 1

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES6P..RS361 + US-RSV..P2/497	0,38	0,24 0	11,25-11,35 10,40-10,80 10,20-10,40

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,1 q 27

1. Edition

En

PES6P 110 A 720 LS 375 RQ 300/1100 PA 658-10

Komb.-Nr. 0 402 046 309

supersedes -

company: MAN

engine: D2566 MLUM/US
191 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15) mm (from BDCRW = 9,0-12,0 mm, Zyl. 6)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,6+0,1	14,7-15,0	0,4 (0,75)			
300	7,4-7,6	1,5-2,0	0,45 (0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications rev/min 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600 VH=	19,2-20,8 max. 46°	600	20,0	10,8 4,0 1350	1145-1160 1185-1215 0-1,0	300	7,5	100 300 390	min 9,0 7,4-7,6 30-2,0	750 1100 880 975	12,6-12,7 11,8-11,9 12,3-12,5 11,9-12,2

Torque-control travel
on flyweight assembly dimension a = 0,3 mmSpeed regulation: At 1145-1160 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7	Control rod travel mm 8
LDA 750	0,7 bar 147,0-150,0 (144,5-152,5)	-	LDA 600	0,2 bar 145,0-149,0 (142,0-152,0)	100	225,0-245,0 (221,0-249,0)	
LDA 1100	0,7 bar 136,0-140,0 (133,0-143,0)		LDA 500	0 bar 144,0-148,0 (141,5-150,5)	300	7,4-7,6 mm RW	

Checking values in brackets

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Testoil-ISO 4113

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D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 q 27 - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES6P..LS 375 +RQ..PA 658-10	0,70	0 0,20 0,15	12,6-12,7 11,7-11,8 12,4-12,5 11,9-12,2

Notes

(1) when n rev/min and gauge pressure = bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 BET 8,8 b 1

En

2. Edition

PE 6 P 120 A 320 RS 377 RQV 275-1200 PA 425-2
Komb.-Nr. 0 401 846 489
Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes 10.83
company RVI
engine MIDS 062030
158 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,8-2,9$
($2,75-2,95$) mm (from BDC) RW = 9.0-12.0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	12,6+0,1	15,0-15,2	0,5(0,9)			
275	5,4-5,6	1,1-1,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1310	15,2-17,8	-	-	-	ca. 10	200	min. 8,5	275	1,0-1,2
ca. 64	11,6 4,0 1500	1245-1255 1375-1405 0-1,0				275-375	275	5,4-5,6	425	3,0-3,5
									900	5,6-5,9
									1200	7,6

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed ②b limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤ travel	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1200	0,7 bar 150,0-152,0 (147,0-155,0)	1245-1255*	LDA 350	0 bar 51,0-55,0 (48,0-58,0)	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

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D. Adjustment Test for Manifold Pressure Compensator

BET 8,8 b 1

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure - bar	Gauge pressure - bar	mm (1)
PE 6 P..RS 377 + RQV..PA 425-2	0,70	0	12,6-12,7
		0,20	11,1-11,2
		0,16	12,2-12,3
			11,5-11,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 HIP 11,9 a

2. Edition

En

PE 6 P 110 A 720 RS 380
Komb.-Nr. 0 401 846 495

RQV 250-950 PA 434-1

supersedes 10.83

company: Hispavinsa

engine: BSR 36 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,75-2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
950	15,5+0,1	19,0-19,2	0,4(0,75)			
250	8,5-8,7	2,4-3,0	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1050	15,2-17,8	-	-	-	ca. 16	100	min. 10,0	200	0,5-0,8
ca. 65	14,5	990-1000					250	8,5-8,7	450	3,8-4,2
	4,0	1115-1145					415-	475=2,0	700	5,2-5,4
	1250	0-1,0				350-465			950	7,5

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 950	0,7 bar 190,0-192,0 (187,0-195,0)	990-1000*	LDA 500	0 bar 141,0-144,0 (138,5-146,5)	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

HIP 11,9 a

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE6P.. RS 380 +RQV.. PA 434-1	0,70	0 0,45 0,34	15,5-15,6 13,2-13,3 15,0-15,1 13,7-13,9

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 BET 8,8 a 2

1. Edition

En

PE 6 P 120 A 320 RS 383 RQV 275-1100 PA 425-1
Komb.-Nr. 0 401 846 481
Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes—

company: RVI

engine MIDS 062030

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,8-2,9}
(2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	14,2+0,1	15,1-15,3	0,5(0,9)			
275	5,4-5,6	1,3-1,9	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1170	15,2-17,8	-	-	-	ca. 11	200	min. 8,5	275	1,2-1,3
ca. 65	13,2 4,0 1450	1155-1165 1315-1345 0 - 1,0				275-365 (3a)	275	5,4-5,6	450 800 1100	3,3-4,0 6,1-6,3 8,0

Torque control travel = — mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational speed limitation intermediate speed 4a	Fuel delivery characteristics high idle speed 5b		Starting fuel delivery Idle switching point 6		Torque-control travel Control rod travel mm 5	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
LDA 1100	0,7 bar 151,0-153,0 (148,0-156,0)	1155-1165*	LDA 500	0 bar 87,0-89,0 (84,0-92,0)	100	130,0-150,0 (126,0-154,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

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BAS

B15

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure increasing

BET 8,8 a 2

-2-

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE6P..RS 383 +RQV..PA 425-1	0,70		14,2-14,3
		0	12,4-12,5
		0,23	13,7-13,8
		0,18	12,8-13,0

Notes

(1) when n

rev/min and

gauge pressure =

bar (maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps **(1A)** and Governors

40

WPP 001/4 DAF 11,6 t 5
2. Edition

En

PE 6 P 120 A 320 RS 385-2 RSV 250-750 P 7/479

supersedes 10.83

Komb.-Nr. 0 401 876 274

company DAF

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

engine DKX 1160

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,8-2,9$ mm (from BDC) ; RW = 9,0-12,0 mm
(2,75-2,95)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre tensioning (torque control valve) mm
1	2	3	4	2	3	6
750	12,6+0,1	22,1-22,3	0,5(0,9)			
250	5,4-5,6	1,4-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 18	250	5,0	-	-
	$X = 3,75$						250	4,9-5,1		
ca. 44	11,6	790-795					250-290	2,0		
2a	4,0	810-825						**		
	950	0,3-1,7								

** Set idle auxiliary spring at 2,0 mm.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40 C (104 F)		Note changed to							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
750	221,0-223,0 (218,0-226,0)	790-795 *	-	-	-	-	-	250	5,0

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

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B17

617

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11.1 q 7

4. Edition

En

PES 6 P120 A 720 LS 388 RQ250/1100 PA 509 (1)

RQV250-1100 PA 504 (2)

Komb.-Nr. 0 402 046 208 (1) MAN-Nr. 2-7083

0 402 046 209 (1) MAN-Nr. 2-7066

0 402 046 204 (2) MAN-Nr. 2-7113

0 402 046 205 (2) MAN-Nr. 2-7111

supersedes

3.84

company:

MAN

engine:

D 2566 MK/MKP

206 kW/2200 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15) mm (from BDC) Cyl. 6
3,00-3,10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	11,4-11,5	17,7- 18,1	0,5(0,9)			
250	6,2- 6,4	1,2- 1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

RQ - 509

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10		Torque control rev/min 11	
Control rod travel mm 2		Control rod travel mm 4		rev/min 6		Control rod travel mm 8		rev/min 9		Control rod travel mm 12	
600	19,2-20,8	600	20,0	9,2	1145-1160	250	6,3	100	min.7,8	1100	10,2-10,3
1100	Breakway			4,0	1180-1210			250	6,2-6,4	975	10,4-10,6
1400	0 - 1,0	VH ca. 49°						350-	390 =2,0	875	11,0-11,1
										750	11,4-11,5

Torque-control travel
on flyweight assembly dimension a = 0,45 mm

Speed regulation: At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes/mm 7	Control rod travel
LDA 750	0,7 bar 177,0-181,0 (174,0-184,0)			LDA 650	0,7 bar 171,0 - 177,0	100	215,0-235,0
				LDA 600	0,31 bar 134,0 - 140,0	250	12,0- 28,0
LDA 1100	0,7 bar 166,0 - 172,0 (162,5 - 175,5)			LDA 600	0 bar 102,0 - 106,0	100-170	(80-190)

Checking values in brackets

(Col.4-5 increase by $\pm 3 \text{ cm}^3$)

7.84

B18

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B. Governor Settings

RQV - 504

MAN 11,1 q7 -2-

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1100	15,2-17,8				ca. 15	100	min. 7,8	250	1,2
							250	6,2-6,4	500	4,0-4,3
ca. 66	9,2	1140-1150					395-455 = 2,0		1150	8,4
	4,0	1220-1250								
	1400	0 - 1,0				3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control rod stop Test oil temp 40°C (104°F) (2)		Rotational speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)	Starting fuel delivery idle switching point (6)	Torque-control travel (5) Control rod travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	rev/min	rev/min	
1	2	3	4	6	8	
LDA	0,7 bar	1140-1150*	LDA	100	1100	
750	177,0 - 181,0		650		215,0-235,0	975
	(174,0 - 184,0)		LDA		12,0- 18,0	875
LDA	0,7 bar		500			750
1100	166,0 - 172,0		LDA	100-170 (80-190)		
	(162,5 - 175,5)		500			

Checking values in brackets (Sp.4-5 increase by + 3,0 cm³)

* 1 mm less control rod travel than co: 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel
	Gauge pressure = bar	Gauge pressure = bar	diminution difference mm
388 + 509	0,7	0,43	11,4 - 11,5
		0,31	10,9 - 11,1
		0	10,3 - 10,4
			9,2 - 9,3
388 + 504	0,7	0,43	11,4 - 11,5
		0,31	10,9 - 11,1
		0	10,3 - 10,4
			9,2 - 9,3

En

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,6 1 6

3. Edition

En

Testoil-ISO 4113

PES 6 P 120 A 320LS 403
Komb.-Nr. 0 402 046 198

RQ 250/1100 PA 487 R

superseded 4.80

company MAN

engine D 2566

6 - 2 - 4 - 1 - 5 - 3
0 - 60-120-180-240-300 ° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

(2,95-3,15)

Port closing at prestroke

3,00-3,10

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	14,0-14,1	22,0 - 22,4	0,5(0,9)			
250	7,5-7,7	1,7 - 2,3	0,8(1,2)			
1100/650/500/500		C,4-5	0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 9 rev/min 10		Torque control rev/min 11 Control rod travel mm 12	
600	19,2-20,8	600	20,0	11,5	1145-1160	250	7,6	100	min.9,1	1100	12,5-12,6
1100	Breakaway	VHca.	49°	4,0	1190-1220			250	7,5-7,7	955-1035	12,9
1300	0 - 1							355-395	2,0	875-955	13,7
										750	14,0-14,1

Torque-control travel on flyweight assembly dimension a = 0,55 mm

Speed regulation: At 1145-1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1 cm ³ /1000 strokes 2		Control rod stop rev/min 3		Fuel delivery characteristics Checking values rev/min 4 cm ³ /1000 strokes 5		Starting fuel delivery Idle speed rev/min 6 cm ³ /1000 strokes/mm 7	
LDA 750	1,0 bar 220,0 - 224,0 (217,0 - 227,0)			LDA 650	1,0 bar 212,0 - 218,0	100	215,0-235,0
LDA 1100	1,0 bar 185,0 - 191,0 (182,0 - 174,0)			LDA 500	=,29 bar 138,0 - 144,0	100-170	(80-190)
				LDA 500	0bar 115,0 - 119,0		

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 1 6 - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = . bar	Control rod travel- diminution difference mm (1)
403 + 487 R	1,0	0,58 0,29 0	14,0-14,1 13,4-13,7 11,7-11,8 10,8-10,9

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Checking values for FM

LDA 1,0 bar
650 1/min (209,0 - 221,0)
LDA 0,29 bar
500 1/min (135,0 - 147,0)
LDA 0bar
500 1/min (112,0 - 122,0)

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 DAF 11,6 x
1. Edition

En

PE 6 P 110 A 320 RS 407-1 RQ 275/1000 PA 641
Komb.-Nr. 0 401 846 472

supersedes -
company DAF
engine DKFL 1160
185 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,8 - 2,9$
(2,75 - 2,95) mm (from BDC) RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	12,8+0,1	15,0 - 15,3	0,4 (0,75)			
275	7,0-7,2	0,9 - 1,4	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check rev/min 2		Full-load speed regulation Setting point rev/min 3				Idle speed regulation Setting point rev/min 7				Torque control rev/min 11	
Control rod travel mm 2		Test specifications Control rod travel mm 4				Test specifications Control rod travel mm 8				Control rod travel mm 12	
600		15,6-16,4				16,0				13,0 -13,1	
						11,1				12,1-12,3	
						1045-1060				12,6-12,8	
						1110-1140				12,2-12,5	
						1300					
						0 - 1,0					

Torque-control travel on flyweight assembly dimension a = 0,35 mm Speed regulation: At 1045-1060 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /-1000 strokes 2				cm ³ /-1000 strokes 5		cm ³ /1000 strokes/mm 7	
LDA				LDA		100	
600				1000			
0,7 bar				0,7 bar		245,0 - 285,0	
150,0 - 153,0				135,5-140,5		(141,0 - 289,0)	
(147,5 - 155,5)				(132,5 - 143,5)		= 19,5-21,0	
				LDA		mm RW	
				600		7,0 - 7,2 mmRW	
				136,0 - 139,0			
				(133,5 - 141,5)			

Checking values in brackets

7.84

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Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 x

-2-

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel: diminution difference mm (1)
PE 6 P.. RS 407-1 + RQ.. PA 641	0,50	0 0,30	12,8 - 12,9 12,1 - 12,2 12,6 - 12,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 RVI 9,8 a 2

2. Edition

En

PES 6 P 120 A 320 RS 419-1 RQ 750 PA 595-1
Komb.-Nr. 0 402 046 232
Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes-
company RVI
engine MIDS 0 62045

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(2,75-2,95)

mm (from BDC)

RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,3+0,1	24,6-24,8	0,5(0,9)			
250	5,8-6,0	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 9 rev/min 10		Torque control rev/min 11 Control rod travel mm 12	
-	-	-	-	12,3 4,0 900	750-755 787-800 0 - 1,0	-	-	-	-	-	-

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: 750-755 min⁻¹

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery idle speed rev/min 6	
cm ³ /1000 strokes 2	cm ³ /1000 strokes 5	cm ³ /1000 strokes 3a	cm ³ /1000 strokes 3b	cm ³ /1000 strokes 7	Control rod travel mm		
700	246,0-248,0 (243,0-251,0)	-	-	-	100	130,0-150,0 (126,0-154,0)	

Checking values in brackets

7.84

Testoil-ISO 4113

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B24

B24

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 11,6 o 1

4. Edition

En

PE 6 P 120 A 320 RS 415

RSV 250-900 P 5/475

superseded 12.82

Komb.-Nr. 0 401 876 248

company DAF

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

engine DKS-E 1160

Note VDT-I-420/114

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,90-3,00$
($2,85-3,05$) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
650	11,9-12,0	18,4-18,7	0,5(0,9)			
250	6,7-6,9	1,9-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 24	250	6,3	650	12,1-12,2
	x =	5,0							900	11,4-11,6
ca. 46	10,4	940-950					250	6,7-6,9		
2a	4,0	1025-1055					395-455	= 2,0		
	1200	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational speed limit	3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)					Idle			
rev/min	cm ³ /1000 strokes	Note changed to .) rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA	0,7 bar		LDA	0,7 bar	100	310,0-350,0 - (306,0-354,0)		-
650	184,0-187,0 (181,0-190,0)	940-950 *	900	181,0-186,0 (178,0-189,0)				
			LDA	0 bar	250	19,0-23,0 (16,0-26,0)		
			600	129,0-132,0 (126,0-135,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

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Test Oil 4119

C1

CA

D. Adjustment Test for Manifold Pressure Compensator

Test at n -

600

rev/min decreasing pressure - in bar gauge pressure
increasing

DAF 11,6 o 1 - 2 -

Pump/governor	Setting	Measurement	Control rod travel diminution difference
	Gauge pressure - bar	Gauge pressure - bar	mm (1)
PE 6 P..RS 415 + RSV..P 5/475	0,70	0 0,27 0,12	11,9-12,0 9,8-9,9 11,4-11,5 10,0-10,6

Notes

(1) when n

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

40

1A WPP 001/4 DAF 11,6 o 3

2. Ausgabe

En

PE 6 P 120 A 320 RS 415-1

RSV 250-900 P 5/475

supersedes 12.82

Komb.-Nr. 0 401 876 259

company DAF

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

engine DKS-E 1160

206 kW (280 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Note VDT-1-420/114

A. Fuel Injection Pump Settings

Port closing at prestroke (2,75-2,95) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
650	11,9+0,1	18,4-18,7	0,5(0,9)			
250	6,7-6,9	1,9-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 24	250	6,3	650	12,1-12,2
	x = 5,0						250	6,7-6,9	900	11,4-11,6
ca. 46	10,4	940-950					395-455	2,0		
2a	4,0	1025-1055								
	1200	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to ... rev/min							
rev/min	cm ³ /1000 strokes	3		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
LDA 650	0,7 bar 184,0-187,0 (181,0-190,0)	940-950*		LDA 900	0,7 bar 181,0-186,0 (178,0-189,0)	100	310,0-350,0 (306,0-354,0)	-	-
				LDA 600	0 bar 129,0-132,0 (126,0-135,0)	250	19,0-23,0 (16,0-26,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

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7.84

Testoil-ISO 4113

C3

C3

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 o 3

- 2 -

Test at n =

600

rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE6P... RS 415-1 + RSV .. P 5/475	0,70	0 0,27 0,12	11,9-12,0 9,8-9,9 11,4-11,5 10,0-10,6

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 11,6 o 6

1. Edition

En

PE 6 P 120 A 320 RS 415-1 RSV 250-1100P5/458-2

Values only apply to test nozzle-and-holder
assembly 1 688 901 015 and fuel-injection test
tubing 1 680 750 067

supersedes -

company DAF

engine DKV 1160

Komb.-Nr. 0 401 876 273

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Note VDT-I-420/114

A. Fuel Injection Pump Settings

Port closing at prestroke $2,8 - 2,9$
 $(2,75 - 2,95)$ mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
650	11,6+0,1	17,6-17,8	0,5 (0,9)			
250	6,5-6,7	1,4 - 2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,1-1,0	-	-	-	ca. 24	250	5,8	650	11,8 -11,9
	$x = 5,0$						250	6,2 - 6,4	1100	10,6 -10,8
ca. 53	9,6	1135-1145					645-705	= 2,0	800	11,5 -11,7
2a	4,0	1225-1255							875	10,9 -11,2
	1390	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min							
rev/min	cm ³ /1000 strokes	3	rev/min	cm ³ /1000 strokes	5	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2		4			6	7	8	9
LDA 650	0,7 bar 175,5-177,5 (172,5-180,5)	1135-1145*	LDA 1090	0,7 bar 164,0 - 170,0 (161,0 - 173,0)		100	315,0-335,0 (311,0-339,0)	250	6,3
			LDA 600	0 bar 147,0-149,0 (144,0-152,0)					

Checking values in brackets

* 1 mm less control rod travel than col 2
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Testoil ISO 4113

C5

C5

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 0 6

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P., RS 415-1 + RSV..P 5/458-2	0,70		11,6 - 11,7
		0	10,5 - 10,6
		0,44	11,3 - 11,4
		0,35	10,6 - 11,0

Notes

(1) when n = rev/min and gauge pressure = bar (: maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 d 1

3. Edition

En

PES 6 P 120 A 320 RS 419 RQV 275-1100 PA 495

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes 83

company RVI

engine: MIDR 062045
206 kW (280 PS)

Komb.-Nr.

0 402 046 249

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke		2,8-2,9 (2,75-2,95) mm (from EDC)		Port closing mark 10,5° after port closing cylinder 1		
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1100	9,7-9,8	17,6-17,8	0,5(0,9)			
275	5,0-5,2	1,9-2,5	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1150	15,2-17,8	-	-	-	ca. 8	200	min. 5,1	250	1,0-1,2
ca. 64	8,7	1155-1165					275	3,3-3,5	530	4,0-4,6
	4,0	1220-1250							820	5,9-6,1
	1350	0-1,0				280-395			1100	8,1
						③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA	0,7 bar	1155-1165*	LDA	0,7 bar	100	150,0-170,0 (146,0-174,0)	-	-
1100	175,5-177,5 (172,5-180,5)		700	163,0-171,0 (160,0-174,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

5.84

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D. Adjustment Test for Manifold Pressure Compensator

RVI 8,8 d 1

- 2 -

Test at n 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure bar	Gauge pressure bar	mm (1)
PES 6 P..RS 419 + RQV..PA 495	0,70	0 0,25 0,20	9,7-9,8 7,7-7,9 9,1-9,2 8,2-8,4

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 9,8 a 3

1. Edition

En

PES 6 P 120 A 320 RS 419 RQV 275-1100 PA 495-5
Komb.-Nr. 0 402 046 300
Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes -
company RVI
engine MIDR 062045
191 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing mark 10,5° after
port closing cylinder 1

Port closing at prestroke 2,8-2,9
(2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	9,7-9,8	16,4 - 16,6	0,5 (0,9)			
275	4,9-5,1	1,7 - 2,3	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2 - 17,8	-	-	-	ca. 9	100	min. 5,3	250	1,0-1,2
ca. 64	8,7	1155-1165					275	3,6-3,8	450	3,4-3,8
	4,0	1215-1245							850	6,1-6,3
	1350	^ - 1,0				285-400 (3a)			1100	8,1

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed ②b intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 164,0-166,0 (161,0-169,0)	1155-1165 *	LDA 700	0,7 bar 152,0-158,0 (149,0-161,0)	100	140,0-160,0 (136,0-164,0)	-	-
			LDA 500	0 bar 100,0-102,0 (97,0-105,0)	275	3,6-3,8mm RW		

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

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D. Adjustment Test for Manifold Pressure Compensator

RVI 9,8 a 3

-2-

Test at n 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6P RS 419 + RQV.. PA 495-5	0,70	0 0,23 0,20	9,7-9,8 8,5-8,6 9,3-9,4 8,7-8,9

Notes

(1) when n

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 9,8 a 4

En 1. Edition

PES 6 P 120 A 320 RS 419 RQV 275-1100 PA 495-6
Komb-Nr. 0 402 046 302
Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes,
company: RVI
engine: MIDR 062030
191 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing mark 10,5° after
port closing cylinder 1

Port closing at prestroke $2,8 - 2,9$
 $(2,75 - 2,95)$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,6+0,1	17,4 - 17,6	0,5 (0,9)			
275	4,1-4,3	0,9 - 1,5	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2 - 17,8	-	-	-	ca.9	200	min.5,9	250	1,0-1,2
ca.64	9,6	1155 - 1165					275	4,1 - 4,3	475	3,5-4,0
	4,0	1230 - 1260							900	6,4-6,6
	1350	0 - 1,0				290-400			1100	8,1

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed ②b limitation intermediate speed		Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤ travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	4a	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 174,0-176,0 (171,0-179,0)	1155 - 1165*		LDA 700	0,7 bar 160,0-166,0 (157,0-169,0)	100	140,0-160,0 (136,0-164,0)	-	-
				LDA 500	0 bar 94,0-96,0 (91,0-99,0)	275	4,1-4,3mmRW		

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

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D. Adjustment Test for Manifold Pressure Compensator

RVI 9,8 a 4

-2-

Test at n 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure bar	Gauge pressure bar	mm (1)	
PES 6 P RS 419 + RQV..PA 495-6	0,70		10,6 - 10,7	
		0	8,4 - 8,5	
		0,27	10,0 - 10,1	
		0,22	8,9 - 9,1	

Notes

(1) when n

rev/min and
gauge pressure =

bar (~ maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 9.8 a 5

1. Edition

En

PES 6 P 120 A 320 RS 419 RQV 275-1100 PA 495-7
Komb.-Nr. 0 402 046 303
Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes
company RVI
engine MIDR 062045
157 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,8-2,9}{(2,75-2,95)}$ mm (from BDQ)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	7,8-7,9	13,2-13,4	0,5(0,9)			
275	4,6-4,8	1,7-2,3	0,8(1,2)			
Port closing mark at 11,5° cam shaft after port closing for 1st. cylinder at control-rod travel 9.0-12.0 mm.						

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 8	200	min. 5,0	275	1,5-1,6
ca. 64	6,8 4,0 1350	1155-1165 1195-1225 0-1,0					275	3,4 - 3,6	450	3,4-3,8
							280-395		850	6,1-6,3
									1100	8,1
						3a				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 132,0-134,0 (129,0-137,0)	1155-1165*	LDA 700	0,7 bar 120,0-126,0 (117,0-129,0)	100	150,0-170,0 (146,0-174,0)	-	-
			LDA 500	0 bar 88,0-90,0 (85,0-93,0)	275	3,4-3,6 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

RVI 9,8 a 5

- 2 -

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 P..RS 419 + RQV..PA 495-7	0,70	0 0,16	7,8-7,9 7,3-7,4 7,5-7,6

Notes

(1) when n

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 d 2

1. Edition

En

PES 6 P 120 A 320 RS 419-2 RQV 275-1050 PA 495-4
Komb.-Nr. 0 402 046 294
Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes
company RVI
engine MIDS 062045
169 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing mark at 9,5° cam shaft
after port closing for 1st. cylinder
at control-rod travel 9.0-12.0 mm.

Port closing at prestroke		mm (from BDQ)					
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning	
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm	
1050	8,8-8,9	15,5-15,7	0,5(0,9)				
275	3,3-3,5	0,7-1,3	0,8(1,2)				

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1130	15,2-17,8	-	-	-	ca. 8	200	min. 5,2	250	1,0-1,2
ca. 63	7,8	1105-1115					275	3,3-3,5	800	4,8-5,0
	4,0	1135-1165							1050	7,5
	1300	0-1,0				275-390				
						③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed	Fuel delivery characteristics		Starting fuel delivery		Torque-control	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel
1	2	3	4	5	6	7	8	9
LDA 1050	0,7 bar 155,0-157,0 (152,0-160,0)	1105-1115*	LDA 700	0,7 bar 145,0-151,0 (142,0-154,0)	100	140,0-160,0 (136,0-164,0)	-	-
			LDA 500	0 bar 106,0-108,0 (103,0-111,0)	275	7,0-13,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

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C15

CAS

D. Adjustment Test for Manifold Pressure Compensator

RVI 8,8 d 2

- 2 -

Test at n **500** rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 P..RS 419-2 + RQV..PA 495-4	0,70	0 0,24 0,23	8,8-8,9 8,0-8,2 8,5-8,6 8,2-8,4

Notes

(1) when n

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 d 3

1. Edition

En

PES 6 P 120 A 320 RS 419-2 RQV 275-950 PA 698
Komb.-Nr. 0 402 046 293
Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes
company RVI
engine MIDS 062045
129 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,8-2,9$
 $(2,75-2,95)$ mm (from BDG)

Port closing mark at 9,5° cam shaft
after port closing for 1st. cylinder
at control-rod travel 9.0-12.0 mm.

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
500	8,0-8,1	10,6-10,8	0,5(0,9)			
275	4,4-4,6	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1070	15,2-17,8	-	-	-	ca. 8	200	min. 5,1	275	1,5-1,6
ca. 62	7,0 4,0 1200	1010-1020 1045-1075 0-1,0					275	3,3 - 3,5	500	3,8-4,3
							280-395		800	6,4-6,7
									950	7,6

Torque control travel a = 0,6 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑧		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
500	106,0-108,0 (103,0-111,0)	1010-1020*	950	124,0-130,0 (121,0-133,0)	100	150,0-170,0 (146,0-164,0)	500	8,0-8,1
							950	7,3-7,4
							750	7,6-7,8
					275	3,3-3,5 mm RW	800	7,4-7,7

Checking values in brackets

* 1 mm less control rod travel than col. 2
7.84

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Testcil-ISO 4113

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 11,4 s

En

1. Edition

PES 6 P 110 A 820 LS 422 RQV 300-1100 PA 594-5

Komb.-Nr. 0 402 046 305

supersedes -

company Daimler-Benz

engine OM 407

147 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0 - 3,1
(2,95 - 3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,2+0,1	11,0 - 11,2	0,4 (0,8)			
300	8,0 - 8,2	1,4 - 2,0	0,4 (0,7)			
600	-	C, Sp. 4 u. 5. 0,6 (0,9)				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max. 1100		5,2 - 17,8	-	-	-	ca. 32	100	min. 8,8	250	1,0 - 1,2
ca. 59	9,2 4,0 1350	1140-1150 1175-1205 0 - 1,5					300	7,3-7,5	530 820 100	3,5-3,7 5,0-5,4 7,7
						300-500 ③a				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤ travel Control rod travel mm	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	mm 9
1100	110,0-112,0 (107,0-115,0)	1140-1150 *	600	93,0 - 97,0 (90,0-100,0)	100	130,0-150,0 (126,0-154,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2
7.84

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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 12,0 c

3. Edition

En

Testoil-ISO 4113

PES 6 P 120 A 320 RS 426

RQV 250-1100 PA 570

supersedes 5.83

company: RVI

engine MIDS 063540

195 kW (265 PS)

Komb.- Nr. 0 402 046 213

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Mark for start of pump delivery on tester
body 12° after start of pump delivery, cyl. 1

Port closing at prestroke $\begin{matrix} 2,8-2,9 \\ (2,75-2,95) \end{matrix}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
650	10,3+0,1	18,0 - 18,3	0,5(0,9)			
250	4,9-5,1	1,3 - 1,9	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1270	15,2-17,8	-	-	-	ca. 9	100	min. 5,5	200	0,7-1,0
ca. 61	8,3	1145-1155					250	3,9-4,1	500	3,4-3,6
	4,0	1220-1250							800	4,8-4,9
	1400	0 - 1,0				275-400			100	6,9
						③a				

Torque control travel a = 1,2 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
LDA	0,7 bar	1140-1150 *	LDA	0,7 bar	100	135,0-155,0	1100	9,1+0,2	
650	180,0-183,0 (177,0-186,0)		1100	170,0-173,0 (167,0-176,0)		131,0-159,0	650	10,3+0,1	
			LDA	0 bar			1030	9,4+0,1	
			500	122,0-126,0 (119,0-129,0)			890	9,9+0,2	

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

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D. Adjustment Test for Manifold Pressure Compensator

RVI 12,0 c - 2 -

Test at n 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure bar	Gauge pressure - bar	mm (1)	
PFS 6 P.. RS 426 + .. PA 570	0,9	0	10,3 - 10,4	
		0,29	8,6 - 8,7	
		0,24	9,8 - 9,9	
			9,0 - 9,2	

Notes

(1) when n

rev/min and
gauge pressure :

bar (: maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 11,4n

En 3. Edition

Testoil-ISO 4113

PES 6 P 100 A 820 LS 432 RSV 350-750 P1/ 487

Komb.-Nr. 0 402 076 051

 supersedes 3.82
 company Daimler-Benz
 engine OM 407
 114 kW (155 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\frac{3,0 - 3,1}{(2,95-3,15)}$ mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	14,2+0,1	12,9 - 13,1	0,3(0,6)			
350	8,4-8,6	1,2 - 1,8	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3 - 1,0	-	-	-	-	-	-	-	-
	x =	2,25								
⑤ ca. 34	13,2	750-755								
	4,0	788-801								
	850	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
700 ²	129,0-131,0 (127,0-133,0)	750-755 *	-	-	-	-	-	-	

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 9,5 a 2

3. Edition

En

Testoil-ISO 4113

PES 5 P 110 A 820 LS 434 RSV 350-750 P 1/487

1 - 3 - 5 - 4 - 2 je 72° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

superseded by 7.83
company Daimler-Benz
engine OM 409
Komb.-Nr. 0 402 075 001

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,0-3,1}{(2,95-3,15)}$ mm (from BDC) cyl. 5; RW = 9,0 - 12,0 mm

Rotational speed rev./min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
730	13,1 $\pm 0,1$	13,5 - 13,7	0,4(0,8)			
350	7,7 - 7,9	1,1 - 1,7	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev./min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev./min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev./min 8	Control rod travel mm 9	rev./min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	-	-	-	-	-
	x =	2,5								
ca. 34 ⑤	12,1 4,0 850	750-755 790-803 0,3-1,7								

* Set idle auxiliary spring at 2,0 mm.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
730	135,0-137,0 (132,0-140,0)	750-755*	-	-	100	130,0-150,0 (126,0-154,0)	-	-	

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 9,5 a 4
3. Edition

En

PES5P110A820 LS 434
Komb.-Nr. 0 402 045 023

RQ300/1100 PA 327-4

supersedes 7.83
company Daimler-Benz
engine OM 409
135 kW (184 PS)

1 - 3 - 5 - 4 - 2 je 72° $\pm 0,50^\circ$ ($\pm 0,75^\circ$)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1
(2,95-3,15) mm (from BDC) 1. 5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,4+0,1	11,0-11,2	0,4(0,8)			
300	7,6-7,8	1,2 - 1,8	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7 Control rod travel mm 8		Test specifications rev/min 9 Control rod travel mm 10		Torque control rev/min 11 Control rod travel mm 12	
600	13,8-14,6	600	14,2	9,4 4,0 1300	1145-1160 1175-1205 0 - 1,5	300	7,1	100 300 380-420	min. 9,1 7,6-7,8 2,0	-	-

Torque-control travel
on flyweight assembly dimension a = - mm

Speed regulation: At 1145-1160 min⁻¹

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1 cm ³ /1000 strokes 2		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4 cm ³ /1000 strokes 5		Starting fuel delivery Idle speed rev/min 6 cm ³ /1000 strokes/mm 7	
1100	110,0-112,0 (107,5-114,5)	-	-	600	90,0-94,0 (87,0- 97,0)	100	130,0-150,0 (126,0-154,0)

Checking values in brackets

Testoil-ISO 4113

①

Test Specifications Fuel Injection Pumps and Governors

① WPP 001/4 CAT 7,0 a

1. Edition

En

PES 4 P 80 A 720 LS 440 RQV 375-1100 PA 610

Komb.-Nr. 9 400 087 277

supersedes

company Caterpillar

engine 3304 NA

100 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,95-2,05
(1,90-2,10) mm (from BDC); RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,0+0,1	11,2-11,3	0,2(0,35)			
375	6,7-6,9	1,0-1,7	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1030	15,2-17,8	-	-	-	ca. 14	250 375 480-540 = 2,0	min. 10,0 5,9-6,1	1100	8,3
ca. 67	12,1 4,0 1350	1130-1140 1230-1260 0 - 1,0				350-450 ③a				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	112,0-113,0 (110,5-114,5)	1130-1140 *	700	107,5-110,5 (106,5-111,5)	100 375	152,0-172,0 = 17,6-18,6 mm RW 5,9-6,1 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 11,6 u 2
2. Edition

En

PE 6 P 110 A 720 RS 441-1 RSV 250-750 P 7/479-1

Komb.-Nr. 0 401 876 270

supersedes 7.83
DAF
company
engine DHS 825 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,8 - 2,9$
(2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	11,6+0,1	14,3-14,6	0,4(0,75)			
250	4,8-5,0	0,9-1,3	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 18	250	4,9	-	-
	x = 4,0						250	4,8-5,0		
ca. 45	10,6	790-795					250-290	= 2,0		
2a	4,0	810-825						**		
	950	0,3-1,7								

The numbers denote the sequence of the tests

* Set idle auxiliary spring at 2,0 mm.

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	Control rod travel mm 9
750	143,0-146,0 (140,5-148,5)	790-795*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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7.84

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 11,4 1 4

4. Edition

En

Testoil-ISO 4113

PES 6 P 110 A 820 LS 442 RSV 350-750 P 1/487
Komb.-Nr. 0 402 076 052

supersedes 7.83
company Daimler-Benz
engine OM 407
121 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{3,2-3,3}
(3,15-3,35) mm (from BDC) ^{1. 6}

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
730	12,1 +0,1	11,9 - 12,1	0,4(0,8)			
350	8,1-8,3	1,3 - 2,1	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	-	-	-	-	-
	x=2,5									
⑤ ca.35	11,1	750-755								
	4,0	788-801								
	850	0,3-1,7								

* Set idle auxiliary spring at 2,0 mm.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
730	119,0 - 121,0 (116,0 - 124,0)	750-755*	-	-	100	130,0-150,0 (126,0-154,0)	-	-	

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 11,4 1 9

1. Edition

En

PES 6 P 110 A 820 LS 442 RQ 250/1100 PA 327-8
Komb.-Nr. 0 402 046 298

supersedes -
company: Daimler-Benz
engine: OM 407
162 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,15 - 3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,0+0,1	11,6-11,8	0,4 (0,8)			
250	8,0-8,2	1,2 - 1,8	0,4 (0,7)			
600	-	C, Sp.4 u. 5	0,6 (0,9)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
PRG check		Setting point		Test specifications		Setting point		Test specifications			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	13,0 - 14,0	550	13,5	10,0 4,0 1300	1145-1160 1180-1210 0 - 1,0	250	7,6	100 250 330-370	min. 9,0 7,5-7,7 = 2,0	-	-

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1145 - 1160 min. 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
1100	116,0 - 118,0 (113,5 - 120,5)	-		600	93,0 - 97,0 (90,0 - 100,0)	100	130,0 - 150,0 (126,0 - 154,0)

Checking values in brackets

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 11,41 10

1. Edition

En

PE 6 P 110 A 820 LS 442 RQ 250/950 PA 483-2

Komb.-Nr. 0 402 046 299

supersedes -

company: Daimler-Benz

engine OM 407

147 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
950	11,5+0,1	11,3-11,5	0,4(0,8)			
250	8,4-8,6	1,4-2,0	0,4(0,7)			
600	-	C, Sp. 4 u. 5	0,6(0,9)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider: PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	13,0-14,0	600	13,5	10,5 4,0 1150	995-1010 1015-1045 0-1,0	250	8,1	100 250 330	min.9,7 8,0-8,2 =2,0	-	-

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

995-1010 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /-1000 strokes 2		Control rod stop rev/min 3		cm ³ /-1000 strokes 5		cm ³ /1000 strokes / mm 7	
950		-		600		100	
113,0-115,0 (110,0-118,0)		-		102,0-106,0 (99,0-109,0)		140,0-160,0 (136,0-164,0)	

Checking values in brackets

7.84

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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 11,4 L3

4. Edition

En

Testoil-ISO 4113

PES 6 P 110 A 820 LS 442

RNV 300-1100 PA 594-3

supersedes 7.84

Daimler-Benz

company:

engine: OM 407

162 kW (220 PS)

Komb.-Nr. 0 402 046 233
0 402 046 301

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{3,2-3,3}
(3,15-3,35) mm (from BDC) Zyl. 6

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	11,0+0,1	11,6 - 11,8	0,4(0,8)			
300	8,0-8,2	1,4 - 2,0	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1140	15,2-17,8	-	-	-	ca. 32	100	min. 9,0	250	1,0-1,3
ca. 60	10,0	1140-1150					300	7,3-7,5	530	3,9-4,2
	4,0	1175-1205							820	5,5-5,8
	1300	0 - 1,0							1100	8,1
						3a				

Torque control travel = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1100	116,0-118,0 (113,0-121,0)	1140-1150*	600	93,0-97,0 90,0-100,0)	100	130,0-150,0 (126,0-154,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 11,4 1 11

1. Edition

En

PES 6 P 110 A 820 LS 442 RQV 300-1100 PA 594-4

Komb.-Nr. 0 402 046 229

supersedes

company Daimler-Benz

engine: OM 407

176 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke ^{3,2-3,3}
 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,7+0,1	12,9-13,1	0,4(0,75)			
300	7,8-8,0	1,4-2,0	0,45(0,75)			
600	-	C, Sp.4 u. 5	(0,9)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1180	15,2-17,8	-	-	-	ca. 30	100	min. 9,0	250	1,0-1,2
ca. 61	10,7	1140-1150					300	7,3-7,5	530	3,5-3,7
	4,0	1180-1210							820	5,0-5,4
	1300	0 - 1,0				320-450			1100	7,7
						③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control rod stop Test oil temp. 40°C (104°F)		Rotational speed	Fuel delivery characteristics		Starting fuel delivery	Torque-control	
rev/min	cm ³ /1000 strokes	limitation intermediate speed	high idle speed	cm ³ /1000 strokes	idle switching point	travel	Control rod travel
1	2	3	4	5	6	7	8
1100	129,0-131,0 (126,5-133,5)	1140-1150*	600	119,0-123,0 (116,0-126,0)	100	130,0-150,0 (126,0-154,0)	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

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Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 11,4 1 6

3. Edition

En

PES 6 P 110 A 820 LS 442-1 RSV 350-1100 P 0/485
Komb.-Nr. 0 402 076 053

superseded 2.84
company Daimler-Benz
OM 407
engine 177 kW (241 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2 - 3,3
(3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,7+0,1	12,5-12,7	0,4 (0,8)			
350	7,8-8,0	1,4-2,0	0,4 (0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Lower rated speed Control lever deflection in degrees rev/min			3 Torque control rev/min Control rod travel mm	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-		350	7,9	-	-
	x	= 3,0					350	7,8-8,0		
ca. 51	10,7	1140-1150					435-495	= 2,0		
2a	4,0	1220-1250								
	1250	0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational speed limit Note changed to 1 rev/min 3		3a Fuel delivery characteristics rev/min cm ³ /1000 strokes 4 5		Starting fuel delivery 5 Idle rev/min cm ³ /1000 strokes 6 7		4a Idle stop rev/min Control rod travel mm 8 9	
1100	125,0-127,0 (122,0-130,0)	1140-1150*	600	107,0-111,0 (104,0-114,0)	100	140,0-160,0 (136,0-164,0)	0 -	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 8,302

1. Edition

En

PE6P100 A 720 RS 447-1 RSV 250-750 P 7/479-1
Komb.-Nr. 0 401 876 269

supersedes
company DAF
engine DHT 825 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,15-3,35) mm (from BDE) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,7+0,1	14,3-14,5	0,35(0,6)			
250	5,3-5,5	0,9-1,3	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed			4 Control lever deflection in degrees 7	Lower rated speed		3 Torque control rev/min 10	Control rod travel mm 11
		4	5	6		rev/min 8	Control rod travel mm 9		
loose	800 0,3-1,0 X = 3,75	-	-	-	ca. 17	250 5,4			
ca. 44	11,7 790-795 4,0 810-825 950 0,3-1,7					250 5,3-5,5			
2a						250-295 = 2,0 **			

The numbers denote the sequence of the tests

** Set idle auxiliary spring at 2,0 mm.

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F)		(6) Rotational- speed limit Note changed to 1 rev/min 3	(3a) Fuel delivery characteristics		Starting fuel delivery		(5) Idle	(4a) Idle stop		Control rod travel mm 9
rev/min 1	cm ³ /1000 strokes 2		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7		rev/min 8		
750	142,5-144,5 (140,5-146,5)	790-795*	-	-	-	-	-	-	-	
					250	9,0-13,0 (6,5-15,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

D8

①

Test Specifications Fuel Injection Pumps ① and Governors

WFP 001/4 BRE 23,1 a 1

1. Edition

En

PE 6 P 130 A 320/3 LS 449 RQV 300-750 PA 682

1- 6- 5- 4- 3- 2

0-75-120-195-240-315° \pm 0,5° (\pm 0,75°)

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes-

company: Breda

ID 36 S-6 V

engine:

Komb.-Nr. 0 401 836 023

A. Fuel Injection Pump Settings

Port closing at prestroke

3,5-3,6
(3,45-3,65)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,0+0,1	23,0-23,3	0,6(1,0)			
300	6,7-6,9	2,4-3,0	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	770	15,2-17,8	-	-	-	ca. 13	100	min. 8,3	300	1,3-1,4
ca. 66	11,0 4,0 950	790-800 835-865 0-1,0				325-435	300 600 750	6,7-6,9	5,3-5,8 8,1	

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational speed limitation intermediate speed 4a		Fuel delivery characteristics high idle speed 5b		Starting fuel delivery idle switching point 6		Torque-control travel Control rod travel mm 5	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	4	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
750	230,0-233,0 (226,5-236,5)	790-800*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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D

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,4 e

1. Edition

En

PES 6 P 110 A 720 LS 455

RQV 250-1100 PA 674

Komb.-Nr. 0 402 046 307

supersedes

company MAN

engine: D 2566 MTE
184 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,0-3,1}{(2,95-3,15)}$ mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	12,8+0,1	15,9-16,2	0,4(0,75)			
250	6,9-7,1	1,1-1,6	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 13	100	min. 8,5	300	1,4-1,7
ca. 46	10,5 4,0 1350	1140-1150 1205-1235 0-1,0					250 340-400 = 2,0	6,9-7,1	800 1100	5,0-5,2 7,9

Torque control travel a = 1,3 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control rod stop Test oil temp 40°C (104°F) ②		Rotational speed ②b limitation intermediate speed	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 800	0,7 bar 159,0-162,0 (156,5-164,5)	1140-1150*	LDA 650	0,7 bar 160,0-164,0 (157,0-167,0)	100	215,0-235,0 (211,0-239,0)	800 1100 900 1000	12,8+0,1 11,5+0,1 12,4+0,2 11,7+0,3
LDA 1100	0,7 bar 136,0-140,0 (133,0-143,0)		LDA 500	0 bar 97,0-100,0 (94,5-102,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

D10

D10

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D. Adjustment Test for Manifold Pressure Compensator

MAN 11,4 e

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure - bar	Gauge pressure - bar	mm (1)
PES 6 P..LS 455 + RQV..PA 674	0,70	0 0,28 0,11	12,8-12,9 10,2-10,3 12,1-12,2 10,7-11,0

Notes

(1) when n

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,4 e 1

1. Edition

En

PES 6 P 110 A 720 LS 455 RQV 250-1100 PA 675

Komb.-Nr. 0 402 046 284

supersedes

company MAN

engine: D 2566 MTE

206 kW

Bagger

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,0-3,1}{(2,95-3,15)}$ mm (from BDC) $RH = 9,0-12,0$ mm - 7yl 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,1+0,1	14,7-14,9	0,4 (0,8)			
250	6,8-7,0	1,0-1,6	0,4 (0,7)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 13	100	min. 8,6	300	1,4-1,7
ca. 46	11,1 4,0 1350	1140-1150 1210-1240 0-1,0					250 340-400 = 2,0	7,0-7,2	800 1100	5,0-5,2 7,9

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed ②b intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤ Control rod travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
1100	147,0-149,0 (144,0-152,0)	1140-1150*	-	-	100	225,0-245,0 (221,0-249,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 CAT 10,5 a

1. Edition

En

PES 6 P 80 A 720 LS 456 RQV 350-1000 PA 609-1

Komb.-Nr. 9 400 087 292

Port-closing test with/without ROBO diaphragm

supersedes

company: Caterpillar

engine 3306 T

150 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $1,65-1,75$ mm (from BDC) RW = 9,0-12,0 mm
(1,60-1,80)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
990	12,5+0,1	11,1-11,2	0,2(0,35)			
350	6,7-6,9	1,0-1,7	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1010	15,2-17,8	-	-	-	ca. 17	250 min. 11,0 350 5,9-6,1 510-570=2,0		325	0,5-2,0
ca. 69	11,5 4,0 1220	1020-1030 1090-1120 0 - 1,0				300-400			400	2,7-3,1
						③a			500	2,5-4,2
									800	6,1-6,6
									1010	8,5

Torque control travel a 1,0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b		Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	4a	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
990	111,0-112,0 (109,5-113,5)	1020-1030 *		500	117,0-119,0 (114,0-118,0)	100	152,0-172,0 =17,6-18,6 mm RW	990	12,5+0,1
				700	114,5-116,5 (113,5-117,5)	350	5,9-6,1 mm RW	500	13,5+0,1
								700	13,4+0,2
								850	12,8+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

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②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,4 c

2. Edition

En

PES 6 P 120 A 720 LS 457

RQ 750 PA 566

supersedes 2.83

company MAN

engine D 2566 MLE
198 kW

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,0-3,1$
(2.95-3.15) mm (from BDC) $z_{y1.6} =$ RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,5+0,1	20,2-20,4	0,5(0,9)			
250	6,1-6,3	1,5-2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	11,5 4,0 900	750-755 776-789 0-1,0	-	-	-	-	-	-

Torque-control travel
on flyweight assembly dimension a = mmSpeed regulation: 750-755 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	Control rod travel mm	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	Control rod travel mm 7
700	202,0-204,0 (199,0-207,0)	-	-	-	-	-	-

Checking values in brackets

7.84

Test oil ISO 4113

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②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,4 c 1

1. Edition

En

PES 6 P 120 A 720 LS 457 RQ 750 PA 661
Komb.-Nr. 0 402 046 267
Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes _

company: MAN

engine: D 2566 MLE
198 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15) mm (from BDC) Zyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,5+0,1	20,2-20,4	0,5(0,8)			
250	6,1-6,3	1,5-2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10		Torque control rev/min 11	
Control rod travel mm 2		Control rod travel mm 4		rev/min 6		Control rod travel mm 8		rev/min 9		Control rod travel mm 12	
-	-	-	-	11,5 4,0 900	750-755 776-789 0-1,0	-	-	-	-	-	-

Torque-control travel
on flyweight assembly dimension a = mm

750 - 755 min⁻¹
Speed regulation: At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /-1000 strokes 2				cm ³ /-1000 strokes 5		cm ³ /1000 strokes/mm 7	
700	202,0-204,0 (199,0-207,0)	-	-	-	-	-	-

Checking values in brackets

7.84

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D15

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,4 d 1

1. Edition

En

PES 6 P 120 A 720 LS 457

RQV 250-1050 PA 672

Komb.-Nr. 0 402 046 280

supersedes-

company: MAN

engine: D 2566 MLE

220 kW

Schiff

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,0-3,1}{(2,95-3,15)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	11,0±0,1	17,4-17,8	0,5(0,9)			
250	6,3-6,5	1,5-2,1	0,65(0,95)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 11	100	min. 7,9	350	2,0-2,5
ca. 63	10,0 4,0 1350	1090-1100 1195-1225 0-1,0					250	6,3-6,5	800	6,4-6,6
							385-445 = 2,0		1050	8,0-8,2

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1050	174,0-178,0 (171,0-181,0)	1090-1100*	-	-	100	285,0-305,0 (281,0-309,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

D16

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D16

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,4 d 2

1. Edition

En

PES 6 P 120 A 720 LS 457

RQV 250-1100 PA 672-1

Komb.-Nr. 0 402 046 281

supercedes_

company: MAN

engine:

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke ^{3,0-3,1}
 (2,95-3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,0+0,1	19,4-19,8	0,5(0,9)			
250	6,3-6,5	1,5-2,1	0,65(0,95)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1140	15,2-17,8	-	-	-	ca. 11	100	min. 7,9	350	2,0-2,6
ca. 64	11,0 4,0 1400	1140-1150 1270-1300 0-1,0					250	6,3-6,5	900	6,8-7,0
							385-445 = 2,0		1100	8,2

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5b) (5a)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	194,0-198,0 (191,0-201,0)	1140-1150*	-	-	250	15,0-21,0 (12,0-24,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

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D17

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 PEN 7,0 i 1

1. Edition

En

PE 6 P 110 A 320 RS 465

RSV 200-1200 P 1/305 R

Komb.-Nr. 0 401 876 268

supersedes

company Volvo-Penta

engine TD 70

175 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,0-3,1$ mm (from BDC) RW = $9,0-12,0$ mm
($2,95-3,15$)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
700	$2,5 \pm 0,1$	$13,0-13,2$	$0,4(0,75)$			$2,5 \pm 0,1$
200	$5,4-5,6$	$1,6-2,2$	$0,3(0,6)$			$(2,2-2,9)$

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	$0,3-1,0$	-	-	-	ca. 13	200	$5,0$	-	-
	$x = 4,25$						200	$5,4-5,6$		
							$280-340 = 2,0$			
ca. 55	11,5	1240-1250								
2a	4,0	1270-1300								
	1480	$0,3-1,7$								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery		5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to)				Idle					
rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9			
700	130,0-132,0 (127,0-135,0)	1240-1250*	-	-	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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①

Test Specifications Fuel Injection Pumps ① and Governors

 NPP 001/4 RVI 14,9 c
2. Edition

En

PES 8 P 120 A320 RS 466 RQV 275-1050 PA 665
1-8-4-2-7-3-6-5 je $45^\circ \pm 0,5^\circ$ ($\pm 75^\circ$)
Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes ^{1/4}
RVI
company
MIVS 083530
engine 268 KW
Komb.-Nr.0 402 048 042

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing mark 13° after
port closing cylinder 1

Port closing at prestroke $2,8 - 2,9$ mm (from BDC)
(2,75 - 2,95)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	9,6-9,7	19,2-19,4	0,5(0,9)			
275	3,5-3,7	1,7- 2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca.8	200	min. 5,2	275	1,5-1,6
ca.63	8,6 4,0 1300	1105-1115 1175-1205 0-1,0				3a	275 275-325=	3,5-3,7 2,0	400 525 650 1050	3,1-3,4 4,0-4,5 5,0-5,2 7,7

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm³/1000 strokes 2	rev/min ④a	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1050	0,9 bar 192,0-194,0 (189,0-197,0)	1105-1115*	LDA 500	0 bar 119,0-121,0 (116,0-124,0)	100	140,0-160,0 (136,0-164,0)	-	-

Checking values in brackets

= 1 mm less control rod travel than col. 2

7,84

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D. Adjustment Test for Manifold Pressure Compensator

Test at n

500 rev/min decreasing pressure - in bar gauge pressure
increasing

RVI 14,9c

-2-

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure - bar	Gauge pressure = bar	mm (1)
PES8P...RS 466 +RQV...PA 665	0,90	0	9,6 - 9,7
		0,30	7,7 - 7,8
		0,26	9,0 - 9,1
			8,1 - 8,3

Notes

(1) when n

rev/min and
gauge pressure

bar (maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MWM 10,8 a
1. Edition

En

PE 6 P 120 A 320 RS 468 RSUV 300-750 P 10 A 320
1-6 - 3- 2 - 5 - 4
0-90-120-210-240-330°+0,5°(+0,75°)

supersedes -
company MWM
D-TBD 234 V6
Komb.-Nr. 0 401 876 278

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

Port closing at prestroke (2,75-2,95)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
750	9,4-9,5	14,3-14,7	0,5(0,9)			
300	6,2-6,4	2,8-3,6	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	→	ca. 26	300	5,8	750	9,4-9,5
	x=4,0						300	6,2-6,4	320	10,6-11,2
ca. 55	8,4	790-800					325-385	=2,0	450	9,4-9,5
2a	4,0	800-830								
	950	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
750	143,0-147,0 (140,0-150,0)	790-800*	-	-	100	260,0-290,0 =15,8-16,0 mm RW	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

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Test ISO 4110

D21

D21

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MWM 10,8 a 1
1. Edition

En

PE 6 P 120 A 320 RS 468 RSUV 300-1150 PO A 324 DR
1- 6- 3 - 2- 5 - 4

0-90-120-210-240-330 \pm 0,5 $^{\circ}$ (\pm 0,75 $^{\circ}$)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -
MWM
company D-TBD 234 V6
engine
Komb.-Nr. 0 401 876 271

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,75-2,95) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1150	9,4-9,5	14,3-14,7	0,5(0,9)			
300	6,2-6,4	2,8-3,6	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca.24	300	5,8	-	-
		x = 4,0					300	6,2-6,4		
							400-460	=2,0		
ca.56	8,4	1190-1200								
2a	4,0	1230-1260								
	400	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40 C (104 F)		Note changed to 1 rev/min				Idle			
rev/min	cm ³ /1000 strokes	3	rev/min	cm ³ /1000 strokes	5	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2		4	5		6	7	8	9
1150	143,0-147,0 (140,0-150,0)	1190-1200*	-	-		100	260,0-290,0 =15,8-16,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

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Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,9 a 4
1. Edition

En

PES 6 P 120 A 720-LS 470 RQ 250/1100 PA 658-9
Komb.-Nr. 0 402 046 308

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes

company MAN

engine D 2866 KUH
265 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,8-2,9$
(2,75-2,95) mm (from BDC) $1,6$; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,5±0,5	23,8-24,0	0,5(0,9)			
250	5,2-5,4	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 9 rev/min 10		Torque control rev/min 11 Control rod travel mm 12	
600	19,2-20,8	600	20,0	10,3	1145-1160	250	5,3	100	min.6,8	750	12,5-12,6
VH=	max. 46°			4,0	1180-1210			250	5,2-5,4	100	11,3-11,4
				1300	0-1,0			315-355	=2,0	935	12,4-12,6
										990	11,7-12,0

Torque-control travel
on flyweight assembly dimension s = 0,65 mm

Speed regulation: At 1145-1160 min⁻¹

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /-1000 strokes 2				cm ³ /-1000 strokes 5		cm ³ /1000 strokes/mm 7	Control rod travel
LDA 750	1,0 bar 238,0-240,0 (235,0-243,0)	-		LDA 650	1,0 bar 239,0-245,0 (236,0-248,0)	100	225,0-245,0 (221,0-249,0)
LDA 1100	1,0 bar 213,0-219,0 (210,0-222,0)			LDA 500	0 bar 139,0-141,0 (136,0-144,0)		

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,9 a 4

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure - bar	Gauge pressure = bar	mm (1)
PES 6 P .. LS 470 +RQ .. PA 658-9	1,0	0 0,40 0,24	12,5-12,6 9,3-9,4 11,1-11,2 10,2-10,6

Notes

(1) when n

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,9 a
3. Edition

En

PE 6 P 120 A 720 LS 470 RQ 250/1100 PA 684
Komb.-Nr. 0 402 046 288
Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes 7.84
MAN
company: D 2866 KF
engine 265 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 2,8 - 2,9 \\ (2,75-2,95) \end{matrix}$ mm (from BDC) Zyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,5+0,1	23,8-24,0	0,5(0,9)			
250	5,2-5,4	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 9 rev/min 10		Torque control rev/min 11	
Control rod travel mm 2		Control rod travel mm 4		Control rod travel mm 5		Control rod travel mm 8		Control rod travel mm 10		Control rod travel mm 12	
600		600		1145-1160		250		100		750	
VH = max. 46°		20,0		10,3		5,3		min. 6,8		12,5-12,6	
				4,0				5,2-5,4		1100	
				1300				315-355 = 2,0		935	
				0-1,0						12,4-12,6	
										990	
										11,7-12,0	

Torque-control travel on flyweight assembly dimension a = 0,45 mm Speed regulation: At 1145-1160 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes/mm 7	
LDA 750				LDA 650		100	
1,0 bar				1,0 bar			
238,0-240,0				239,0-245,0			
(235,0-243,0)				(236,0-248,0)			
LDA 1100				LDA 500			
1,0 bar				0 bar			
214,0-218,0				139,0-141,0			
(211,0-221,0)				(136,0-144,0)			

Checking values in brackets

9.84

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E1

EA

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,9 a

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE6P..LS470 + RQ..PA684	1,0	0 0,40 0,11	12,5 - 12,6 9,3 - 9,4 11,1 - 11,2 9,4 - 9,7

Notes

(1) when n :

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,4 f
1. Edition

En

PES 6 P 100 A 720 LS 471 RQ 250/1100 PA 685
Komb.-Nr. 0 402 046 287

supersedes-

company: MAN

engine: D 2566 UH/200
147 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke (3,05-3,25) mm (from BDG) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,3+0,1	9,4-9,6	0,35(0,6)			
250	4,9-5,1	1,2-1,8	0,35(0,58)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10		Torque control rev/min 11	
Control rod travel mm 2		Control rod travel mm 4		rev/min 6		Control rod travel mm 8		rev/min 9		Control rod travel mm 12	
600		600		1145-1160 1215-1245 1350		250		100 250 340-380=2,0		700	
15,6-16,4		16,0		11,3 4,0 0-1,0		5,0		min.6,5 4,9-5,1 380=2,0		12,4-12,5 12,3-12,5	

Torque-control travel on flyweight assembly dimension a = 0 mm Speed regulation: At 1145-1160 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /-1000 strokes 2		Control rod travel mm 3a		cm ³ /-1000 strokes 5		cm ³ /1000 strokes/mm 7	
750		-		500 1100		100	
94,0-96,0 (92,0-98,0)				85,0-88,0 (82,5-90,5) 100,0-104,0 (97,5-106,5)		115,0-135,0 (111,0-139,0)	

Checking values in brackets

7.84

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E3

E3

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 UNI 9.6 c
1. Edition

En

PES 6 P 110 A 320 RS 472 RQ 275/1300 PA 689
Komb.-Nr. 0 402 046 292

supersedes
company: IVECO-Unic
engine: 8220-12
148 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,15-2,35) mm (from BDC) RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	8,9-9,0	9,6-9,9	0,4(0,75)			
275	4,2-4,4	1,5-2,0	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7 Control rod travel mm 8		Test specifications rev/min 9 Control rod travel mm 10		Torque control rev/min 11 Control rod travel mm 12	
600	15,6-16,4	600	16,0	7,9 4,0 1500	1345-1360 1400-1430 0-1,0	275	4,3	100 275 335-375=2,0	min.5,8 4,2-4,4 75=2,0	1300 700 865 970	8,9-9,0 9,2-9,3 9,1-9,3 8,9-9,2

Torque-control travel on flyweight assembly dimension a = 0,2 mm Speed regulation: At 1345-1360 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1 cm ³ /1000 strokes 2		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4 cm ³ /1000 strokes 5		Starting fuel delivery Idle speed rev/min 6 cm ³ /1000 strokes/mm 7	
1300	96,0-99,0 (93,5-101,5)	-	-	700	87,0-91,0 (84,0-94,0)	100	145,0-165,0 (141,0-169,0)

Checking values in brackets

7.84

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Test oil: ISO 4113

E4

E4

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 11,6 a 1
1. Edition

En

PE 6 P 100 A 720 RS 473 RQ 300/1100 PA 327-8
Komb.-Nr. 0 401 846 494

supersedes
company Daimler-Benz
engine OM 355

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\overset{3,5-3,6}{(3,45-3,65)}$ mm (from BDQ) RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,1+0,	12,5-12,7	0,35(0,6)			
300	7,9-8,	1,7-2,3	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point ①				Idle speed regulation Setting point ①				Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	13,8-14,6	650	14,2	12,1 4,0 1350	1145-1160 1190-1220 0-1,0	300	6,1	100 300 320-370=2,0	min.7,5 6,0-6,2 2,0	-	-

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: AI 1145-1160 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
1100	125,0-127,0 (123,0-129,0)	-	600	117,0-121,0 (114,0-124,0)	100	150,0-170,0 (146,0-174,0)

Checking values in brackets

7.84

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E5

E5

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 L
1. Edition

En

PE 6 P 120 A 320 RS 474 RQV 275-1200 PA 425-3
Komb.-Nr. 0 401 846 499

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes
company: RVI
engine: MIDS 0620 30
168 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 mm (from BDO) RW = 9,0-12,0 mm
(3,45-3,65)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1200	12,6+0,1	14,8-15,0	0,5(0,9)			
275	6,0-6,2	0,8-1,4	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1230	15,2-17,8	-	-	-	ca. 12	200	min. 9,1	275	1,2-1,4
ca. 65	11,6 4,0 1500	1265-1275 1380-1410 0-1,0				275-360	275	6,0-6,2	400 900 200	2,9-3,4 5,8-6,0 7,9

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1200	148,0-150,0 (145,0-153,0)	1265-1275*	750	137,0-143,0 (134,0-146,0)	100	105,0-125,0 (101,0-129,0)	-	-
1200	0,7 bar		750	0,7 bar				

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

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E6

E6

D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing
increasing pressure - in bar gauge pressure

RVI 8,8 1

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P .. RS 474 + RQV..PA 425-3	0,70		12,6 - 12,7
		0	11,3 - 11,4
		0,20	12,3 - 12,4
		0,16	11,6 - 11,8

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,4 g
1. Edition

En

PES 6 P 110 A 720 LS 477 RQ 250/1100 PA 685
Komb.-Nr. 0 402 046 304

supersedes
company: MAN
engine: D 2566 UH/200
177 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,05-3,25) mm (from BDC) Zy! 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	11,7+0,1	12,3-12,6	0,4 (0,75)			
250	6,0-6,2	1,5-2,0	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 9 rev/min 10		Torque control rev/min 11	
	Control rod travel mm 2		Control rod travel mm 4				Control rod travel mm 8		Control rod travel mm 10		Control rod travel mm 12
600	15,6-16,4	600	16,0	10,7 4,0 1350	1145-1160 1210-1240 0-1,0	250	6,1	100 250 370	min.7,6 6,0-6,2 410=2,0	1100 500	11,7-11,8 11,7-11,9

Torque-control travel
on flyweight assembly dimension a = 0 mm

Speed regulation: At 1145-1160 min⁻¹

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
	cm ³ /-1000 strokes 2				cm ³ /-1000 strokes 5		cm ³ /1000 strokes/mm 7
800	123,0-126,0 (120,5-128,5)	-		1100 500	127,0-133,0 (124,0-136,0) 113,0-119,0 (110,0-122,0)	100 250	110,0-130,0 (106,0-134,0) 15,0-20,0 (12,5-22,5)

Checking values in brackets

7.84

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Testoil-ISO 4113

E8

E8

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 10,0 b

1. Edition

En

PE 5 P 120 A 720 RS 480 RQ 250/1100 PA 269 R

1-2-4-5-3 je 72 ° + 0,5 ° (+ 0,75 °)

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes

company Mercedes-Benz Bras.

OM 355-5 0

Komb.-Nr. 9 400 087 311

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

1,9-2,0
(1,85-2,05)

mm (from BDG) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,2+0,1	20,1-20,3	0,5 (0,9)			
250	5,9-6,1	1,3-1,9	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	11,2 4,0 1350	1125-1145 1190-1220 0 - 1,0	250	6,0	100 250 385	min.7,0 5,9-6,1 425=2,0	-	-

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

1125-1145 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery idle speed	
②		③a		③b		⑥	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3		rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
1100	201,0-203,0 (198,0-206,0)	450		500	202,0-208,0 (199,0-211,0)	100	335,0-355,0 =17,6-18,6 mm RW

Checking values in brackets

7.84

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ② and Governors

IIPP 001/4 MB 9,6 a

9. Edition

En

Testoil-ISO 4113

PE 6 P 100 A 320 LS 805

RQ 300/1250 PA 127 R (1)

 supersedes 7.83
 company: Daimler Benz
 engine: OM 401

ROV 300-1250 PA 227 R (2)

 6 - 3 - 5 - 2 - 4 - 1
 0 -45 -120-165-240-285 $\pm 0,5^\circ (\pm 0,75^\circ)$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\begin{matrix} 3,40-3,50 \\ (3,35-3,55) \end{matrix}$ mm (from BDC) $\frac{1}{2}$ - 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,0+0,1	10,6 - 10,8	0,3(0,6)			
300	7,9-8,1	1,9 - 2,5	0,3(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

RQ..187 R (1)

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3				Idle speed regulation Setting point rev/min 7				Torque control rev/min 11	
Control rod travel mm 2		Test specifications Control rod travel mm 4				Test specifications Control rod travel mm 10				Control rod travel mm 12	
650	13,8-14,6	650	14,2	10,0	1295-1310	300	8,0	100	min. 9,5	1250	11,1-11,2
1450	0 - 1			4,0	1330-1360			300	7,9-8,1	600	11,1-11,3
								420-450	=2,0		
								500	0 - 1		

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes/mm 7	
(1) 1250	107,0 - 109,0 (105,0 - 111,0)	600		600	85,0 - 90,0 (83,0 - 92,0)	100	110 - 130
						1355	Streug. max. 4 (6)

Checking values in brackets

B. Governor Settings

RQV.. 227 R (2)

MB 9,6 a

- 2 -

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1290	15,2-17,8	-	-	-	ca. 12	100 300	min. 9,5 17,9-8,1	250 580 920 1250	0,2-0,6 3,0-3,3 5,1-5,5 7,8
ca. 66	10,0 4,0 1450	1290-1300 1330-1360 0 - 1,0				325-450 (3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(2) 1250	106,0-108,0 (104,0-110,0)	1290-1300*	600	83,0 - 88,0 (80,0 - 92,0)	100	110 - 130		
						100-250 (80-270)		

Checking values in brackets

* 1 mm less control rod travel than co: 2

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n - rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel
	Gauge pressure = bar	Gauge pressure = bar	diminution difference mm

En

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 IHC 13,4 e 1

1. Edition

En

PES 6 P 110 A 420 LS 3037

RSV 350-1050 P2/423 DR

Values only apply to test nozzle-and-holder
assembly 1 688 901 016 and fuel-injection test
tubing 9 681 271 027

supersedes

company IHC

engine DT1-817 C

Komb.-Nr. 0 402 076 708

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Inlet pressure 2,8 bar

Port closing at prestroke $2,0-2,1$
 $(1,95-2,15)$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	11,5+0,1	20,5-20,7	0,4			
350	4,6-4,7	2,0-2,5				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-			**	1050	11,5-11,6
ca. 45	10,5	1090-1100				ca. 23	100	20,0-21,0	850	12,6-12,7
2a	4,0	1145-1175					200	11,0-21,0	750	12,9-13,0
	1300	0,3-1,7					350	4,6		
							360-420	= 2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop		(6) Rotational speed limit		(3a) Fuel delivery characteristics		Starting fuel delivery		(5)		(4a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to)				Idle					
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
LDA 1050	0,8 bar 205,0-207,0 (203,0-209,0)	1090-1100*	LDA 750	0,8 bar 225,0-231,0 (223,0-233,0)	100	185,0-205,0	0	-			-
			LDA 800	0 bar 145,0-153,0 (142,0-156,0)	350	20,0-25,0					

Checking values in brackets

* 1 mm less control rod travel than col 2

With control lever in end position: increase speed until 4 mm control-rod travel is reached. Then adjust idle spring so that it makes contact and screw out by one turn.

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E12

ER

D. Adjustment Test for Manifold Pressure Compensator

IHC 13,4 e 1

- 2 -

Test at n = 800 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES6P..LS3037 + RSV..P2/423DR	0,18-0,24	0,56-0,58	Control-rod travel aspiration + 0,5 mm Full-load control-rod travel - 0,5 mm

Notes

(1) when n

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4 MM 39,8 c
3. Edition

En

- (1) PE 6 P 130 A 300 LS 3051
(2) PE 6 P 130 A 320 LS 3052 RSUV 300-750 P9A 332/1 R
(3) PE 6 P 130 A 300 LS 3052

supersedes 1.83
company MWM-Südbremse
engine TBD 602-V 12 K
Komb.-Nr. 0 401 816 703 (1)
0 401 876 711 (2)
0 401 816 705 (3)

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,75-2,95) mm (from BDC) = 19,5-22,5 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,0+0,1	31,7-32,1 (31,4-32,4)	0,5 (0,9)			
300	5,4-5,6	4,6-5,4	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 29	300	4,9	700	12,0-12,1
	x = 5,25								325	13,2-13,8
ca. 70	11,0	790-800					300	5,3-5,5	450	12,0-12,1
②a	4,0	815-845					325-385	= 2,0		
	980	0,3-1,7								

The numbers denote the sequence of the tests without (1 u. 3) and

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting Idle delivery ⑤		④a idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
		790-800*			100	19,5-21,0	-	-	

The full-load delivery is adjusted on the engine in accordance with the engine inspection sheet. Pumps (1) and (2) or (1) and (3) operate in tandem.

Checking values in brackets

* 1 mm less control rod travel than col 2

5.84

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Testoil-ISO 4113

E14

E14

Cam sequence and angular cam spacing.

1- 5- 3 - 4 - 2 - 6 (1)

0-15-120-135-240-255° \pm 0,5° (\pm 0,75°)

1- 6- 2 - 4 - 3 - 5 (2 u. 3)

0-15-120-135-240-255° \pm 0,5° (\pm 0,75°)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 10,0 q 5

1. Edition

En

PE 6 P 110 A 320 RS 3108 RQV 325-1100 PA 232

Komb.-Nr. 0 401 846 753

supersedes
company: Volvo-BM
engine: TD 100 G

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,0-3,1$
($2,95-3,15$) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,5+0,1	14,8-15,0	0,4(0,8)			
325	3,9-4,1	1,6-2,0	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1175	15,2-17,8	-	-	-	ca. 11	100	min.6,0	275	2-1,4
ca. 44	10,5 4,0 1350	1140-1150 1220-1250 0-1,0					325 340-400=2,0	3,9-4,1	550	3,3-3,8
									825	5,3-5,6
									100	8,0

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 700	0,75 bar 148,0-150,0 (145,0-153,0)	1140-1150*	LDA 700	0 bar 114,0-118,0 (111,0-121,0)	100	170,0-200,0 =20,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

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8.84

D. Adjustment Test for Manifold Pressure Compensator

VOL 10,0 q 5

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure bar	Gauge pressure - bar	mm (1)
PE 6 P..RS 3108 +RQV..PA 232	0,75	0 0,46 0,34	11,6-11,7 9,7-9,8 11,1-11,2 10,3-10,5

Notes

(1) when n

rev/min and
gauge pressure -

bar (- maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 18,3 d

4 . Edition

En

Testoil-ISO 4113

PE 10 P 110 A 320 LS 3818

RQV 300-1150 PA 486-2

supersad 84

company Daimler-Benz

engine OM 423

261 kW (355 PS)

Komb.-Nr. 0 401 849 706

1 - 8 - 7 - 6 - 3 - 5 - 2 - 10 - 9 - 4

0 -27 -72 -99 -144-171-216-243-288-315° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $4,0 - 4,1$
 (3,95-4,15) mm (from BDC) Zyl. 10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,1+0,1	12,4 - 12,6	0,4(0,8)			
300	8,5-8,7	1,4 - 2,2	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 19	100	min.10,2	250	1,0-1,2
ca. 65	11,1	1190-1200					300	8,5-8,7	550	3,4-3,7
	4,0	1240-1270							850	4,9-5,3
	1400	0 - 1,0				330-470			1150	7,6

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1150	124,0-126,0 (121,5-128,5)	1190-1200 *	600	110,0-114,0 (107,0-117,0)	100	140,0-160,0 (136,0-164,0)	1150	12,1+0,1
			900	118,0-123,0 (115,0-126,0)			600	12,5+0,1
							900	12,4+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.84

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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAC 10,9 c

1. Edition

En

US-PES 6 P 120 A 720/3 RS 6008 US-ROV 300/500-1050 PA

Komb.-Nr. 9 400 231 181

591-3 K

supersedes

company Mack

engine EE6-335

250 kW

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

Note VDT-I-MAC 002!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

3,2,3,3
(3,15-3,35)

mm (from BDC)

PLE-Maß=0,740"-0,820"

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ / 100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1050	14,0+0,1	25,9-26,1	0,5(0,9)			
300	5,8-6,0	13,0-13,1	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1120	15,2-17,8	-	-	-	ca.20	250	9,8-11,3		
ca.63	13,0 4,0 1250	1090-1100 1195-1225 0-1,0					300 400 710-770=2,0	7,9-8,1 3,8-5,2		
						3a				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1050	259,0-261,0 (256,0-264,0)	1090-1100*	800	219,5-225,5 (216,5-228,5 212,5-218,5 (209,5-221,5)	100	120,0-180,0	1050 1000 900 700 500	14,0 13,8+0,1 13,3+0,1 12,7+0,1 12,5+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2
7.84

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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 11,0 z

1. Edition

En

PE 6 P 120 A 720 RS 7013

RQV 200-1000 PA 715

Komb.-Nr. 9 400 087 303

supersedes

compansaab-Scania Brasilien

engine: DSE 11

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $5,0-5,1$ mm (from BDC) RW = $9,0-12,0$ mm
(4,95-5,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	15,0+0,1	26,8-27,0	0,6 (0,9)			3,3 [±] 0,1
225	5,4-5,6	4,3-4,7	0,3 (0,6)			(3,0-3,5)

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1000	15,2-17,8	-	-	-	ca. 12	100	min. 6,9		
ca. 62	14,0 4,0 1300	1040-1050 1170-1200 0-1,0				225-365	225 370-430=2,0	5,4-5,6		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational speed limitation intermediate speed 4a		Fuel delivery characteristics high idle speed 5b		Starting fuel delivery idle switching point 6		Torque-control travel Control rod travel mm 5	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9	
700	268,0-270,0 (265,0-273,0)	1040-1050*	1000	260,0-268,0 (257,0-271,0)	100	300,0-350,0 20,0-21,0 mm RW	-	-	

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.84

E20

E10

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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 14,2 f

1. Edition

En

PE 8 P 120 A 920/4 LS 7014 RQV 250-1000 PA 716

Komb.-Nr. 9 400 087 304

1-2-7-3-4-5-6-8 ie $45^\circ \pm 0,50^\circ (\pm 0,75^\circ)$

Values only apply to test nozzle-and-holder

assembly 1 688 901 019 and fuel-injection test

tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes

company Saab-Scania Brasilien

engine DSE 14

A. Fuel Injection Pump Settings

Port closing at prestroke $5,0-5,1$ mm (from BDC) RW = $9,0-12,0$ mm
(4,95-5,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	15,0+0,1	26,8-27,0	0,6(0,9)			3,3 \pm 0,1 (3,0-3,5)
225	5,4-5,6	4,3-4,7	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1000	15,2-17,8	-	-	-	ca. 12	100	min. 6,9		
ca. 62	14,0 4,0 1300	1040-1050 1170-1200 0 - 1,0				225-365	225	5,4-5,6		
						3a	370-430	2,0		

Torque control travel = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed (2b) limitation intermediate speed (4a)	Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery (6) idle switching point	Torque-control (5) travel		
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
700	268,0-270,0 (265,0-273,0)	1040-1050*	1000	260,0-268,0 (257,0-271,0)	100	300-350 = 20,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2
8.84

E21

ELA

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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 VWV 1,6 W 6

3. Edition

En

Testoil-ISO 4113

VE 4/9 F 2250 R 134-4

Overflow temperature 45° C

superseded 12.83

company VWV

engine: 086 T

U 460 494 137

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/.

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,2 - 3,7 mm	0,75	
1.2 Supply-pump pressure	1500	4,6 - 5,2 bar (kgf/cm ²)	0,75	
1.3 Full-load delivery with charge-air pressure	1500	42,5 - 43,5 cm ³ /1000 strokes	0,75	2,5 (3,0)
Full-load delivery without charge-air pressure	600	22,5 - 23,5 cm ³ /1000 strokes	0	
1.4 Idle regulation	475	6,0 - 10,0 cm ³ /1000 strokes	0	2,0 (3,0)
1.5 Full-speed regulation	2525	9,0 - 15,0 cm ³ /1000 strokes	0,75	
1.6 Start	100	min. 35 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing				

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min	1000	1500	2250
LDA=0,75 bar	mm	1,3-2,1 (1,0-2,4)	(2,8-4,2)	6,0-6,8 (5,7-7,1)
2.2 Supply pump	n = rev/min	600		2250
LDA=0,75 bar	bar (kgf/cm ²)	2,5-3,1		6,5-7,1
Overflow delivery	n = rev/min	600 (0 bar)		2250 (0,75 bar)
	cm ³ /10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2750	max. 3,0	0,75
	2525	(8,0-16,0)	0,75
	2250	37,5-39,5 (36,2-40,8)	0,75
	1500	(40,7-45,3)	0,75
	1000 *	32,5-33,5 (30,7-35,3)	0,30
	600	(20,0-26,0)	0
switch-off			
elektr.	400	0	
Idle stop	475	(4,0-12,0)	
	1200	max. 4,0	
	1125 **	22,0-24,0	
End stop	400	min. 21	
	500	max. 29	

2.4 Solenoid

 max. cut-in voltage
test voltage

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2 - 3,4
KF	5,7 - 6,0
MS	1,2 - 1,4
SVS	3,2
A	
B	

Observations

*

**

Please note instructions on sheet 2.

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* Manifold-pressure compensator stroke = 4,0

** Setting point for EGR

Pull control lever toward full load untill gauge fits over driver and housing cover web. Measure delivery.

Test Specifications

Distributor-type

Fuel-injection Pumps

VE 4/9 F 2300 R 141

Overflow temperature 45° C

superseded 12.83

0 460 494 132

Test pressure line

company: Fiat

DHK: 1 688 901 022/130 bar

6x2x450 mm / 1 680 750 073

engine: X 8/43

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	4,3-4,7 mm		
1.2 Supply-pump pressure	1500	5,6-6,2 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure		cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	1500	31,0-32,0 cm ³ /1000 strokes		2,5(3,0)
1.4 Idle regulation	350	9,0-13,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	2500	11,0-17,0 cm ³ /1000 strokes		
1.6 Start	100	min. 55,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	1500			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	800 1,7-2,5(1,4-2,8)	1500 (3,8-5,2)	2300 7,1-7,9(6,8-8,2)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,8-3,4		2300 7,4-8,0
Overflow delivery	n = rev/min cm ³ /10 s	400 55-138(40-153)		2300 55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2600 2500 2400 2250 1500 1000 600	6,2-6,8 (6,1-6,9) (10,0-18,0) 21,0-27,0(20,0-28,0) 32,7-34,7(31,4-36,0) (29,2-33,8) 30,7-33,3(29,0-35,0) 32,0-35,0(30,5-36,5)	
switch-off			
Idle stop	350 400 540	(7,0-15,0) max. 4,0 0	
End stop	300 400	min. 45,0 max. 46,0	
2.4 Solenoid	max. cut-in voltage xxx min. 10 V rated voltage 12V.		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,1-3,4
KF	5,7-5,9
MS	1,7-1,9
SVS	2,8
XK	20,2-22,2
XL	10,3-13,7

Observations

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 PEU 1,9 b

3. Edition

En

V E 4/9 F 2300 R 162

Overflow temperature 45° C

0 460 494 153

DHK: 1 688 901 022/130 bar

Test pressure line

6x2x450 mm / 1 680 750 073

 superseded by 07.84
 company: Peugeot
 engine: XUD 9

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	2000	7,8-8,2 mm		
1.2 Supply-pump pressure	1250	3,9-4,5 bar (kgf/cm ²)		
1.3 Full load delivery with charge-air pressure	-	- cm ³ /1000 strokes		
Full-load delivery without charge-air pressure *	1250	29,5-30,5 cm ³ /1000 strokes		2,5(3,0)
1.4 Idle regulation	A 550	2,5-3,5 cm ³ /1000 strokes		B 2,5(3,0)
1.5 Full-speed regulation	2400	20,0-26,0 cm ³ /1000 strokes		
1.6 Start	100	min. 44,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	1250			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	700 0,5-1,5(0,3-1,7)	1250 3,4-4,2(3,1-4,5)	2000 (7,3-8,7)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	700 2,3-2,9		2000 5,9-6,5
Overflow delivery	n = rev/min cm ³ /10 s	600 55-138(40-153)		2300 55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2650 2500 2400 2250 2000 1250 700	max. 7,0 11,5-17,5 (10,5-18,5) (19,0-27,0) 30,0-32,0 (28,7-33,2) 30,6-32,6 (29,3-33,8) (27,7-32,2) 29,5-32,5 (28,0-34,0)	
switch-off	2300	0	
Idle stop	A 550 B 375 C 470	2,5-3,5 8,5-10,5 (5,5-13,5) 8,0-10,5 (5,0-13,0)	
End stop	200 300	min. 40,0 max. 35,0	
2.4 Solenoid	max cut-in voltage xxxxx	xxx min. 10 V xxxxx rated voltage 12V.	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-6,0
MS	1,3-1,5
SVS	3,0
A	
B	

Observations

*Residual delivery setting
Idle setting (LFG)
as per VDT-I-460135

Test Specifications

Distributor-type

Fuel-injection Pumps

Testoil-ISO 4113

VE 4/8 F 2300 R 171

Overflow temperature 45° C

 superseded by 07.84
 company: Peugeot
 engine: XUD 7

0 460 484 010

Test pressure line

6x2x450 mm / 1 680 750 073

DHK: 1 688 901 022/130 bar

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	1250	3,8- 4,2 mm		
1 2 Supply-pump pressure	1250	4,3- 4,9 bar (kgf/cm ²)		
1 3 Full-load delivery with charge-air pressure	-	- cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	1250	29,5-30,5 cm ³ /1000 strokes		2,5(3,0)
1 4 Idle regulation *	A 550	3,5- 4,5 cm ³ /1000 strokes		B 2,0(3,0)
1 5 Full-speed regulation	2400	19,0-25,0 cm ³ /1000 strokes		
1 6 Start	100	min. 42,0 cm ³ /1000 strokes		
1 7 Load-dependent port-closing	1250			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	700 0,8-1,6(0,5-1,9)	1250 (3,3-4,7)	2000 8,0-8,8(7,7-9,1)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	700 2,8-3,4		2000 6,4-7,0
Overflow delivery	n = rev/min cm ³ /10 s			2300 55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2650 2500 2400 2250 2000 1250 700	max. 7,0 11,5-17,5 (10,5-18,5) (18,0-26,0) 28,0-30,0 (26,7-31,3) 29,0-31,0 (27,7-32,3) (27,7-32,3) 29,5-32,5 (28,0-34,0)	
switch-off	2300	0	
Idle stop	A 550 B 350 C 470	3,5 - 4,5 8,0 -12,0 (6,0-14,0) 8,0 -12,0 (6,0-14,0)	
End stop	200 300	min. 44,0 max. 34,0	
2.4 Solenoid	max. cut-in voltage test voltage xxxxxxxxxx	xx min 10 V rated voltage 12V.	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,2-5,5
MS	1,3-1,5
SVS	max. 3,0
A	
B	

Observations

 *Residual delivery set-
 ting Idle setting (LFG)
 as per VDT-I-460135

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 CUM 5,9 g

2. Edition

En

VE 6/12F 1400 R173

O 460 426 038

DHK: 1688 901 016/207+3 bar

Overflow temperature 45° C

supersäde 8.84

company: Cummins

engine: 6 BT-590

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm \pm 0,02 (0,04)

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1100	2,1-2,5 mm	0,75	
1.2 Supply pump pressure	1100	4,3-4,9 bar (kgf/cm ²)	0,75	
1.3 Full-load delivery with charge-air pressure	1100	86,0-87,0 cm ³ /1000 strokes	0,75	4,0 (4,5)
Full-load delivery without charge-air pressure	500	73,5-74,5 cm ³ /1000 strokes	0	
1.4 Idle regulation	375	20,0-26,0 cm ³ /1000 strokes	0	3,5 (4,5)
1.5 Full-speed regulation	1600	31,0-39,0 cm ³ /1000 strokes	0,75	
1.6 Start	100	min. 97,0 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min	900	1100	1400
LDA = 0,75 bar	mm	0,4-1,2 (0,1-1,5)	(1,6-3,0)	2,9-3,7 (2,6-4,0)
2.2 Supply pump	n = rev/min	500	1400	
LDA = 0,75 bar	bar (kgf/cm ²)	2,0-2,6	5,6-6,2	
Overflow delivery	n = rev/min	500	1400	
	cm ³ /10 s	55-138 (40-153)	55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1750	max. 1,5	0,75
	1600	(30,0-40,0)	0,75
	1400	79,5-82,5 (78,0-84,0)	0,75
	1250	82,5-85,5 (81,0-87,0)	0,75
	1100	(83,5-89,5)	0,75
	* 750	80,0-81,0 (77,5-83,5)	0,3
	500	(70,3-77,7)	
switch-off			
Idle stop	450	max. 1,5	
	375	(18,0-28,0)	
	300	35,0-43,0 (34,0-44,0)	
End stop	130	min. 97,0	
	200	max. 85,0	
2.4 Solenoid	max. cut-in voltage	xx min. 10 Volt	
	test voltage	rated voltage 12V.	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,1-5,9
MS	1,4-1,6
SVS	2,4
A	
B	

Observations

Stop check electric
shutoff device at
375 min/1.

Manifold-pressure
compensator stroke
= 4,5 mm

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 SOA 3,7 a

1. Edition

En

PES 4 A 80 D 410/3 RS 1183

RSV 325-1150 A 8 B 493-1 L

supersedes

company Sonacome

Komb.-Nr. 0 400 464 095

engine F 4 L 912

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{1,9-2,0}
(1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,6+0,1	5,0-5,1	0,2(0,35)			
325	9,3-9,5	1,7-2,3	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 21	325	8,9	1150	10,6-10,7
	x = 4,0						100	min. 19,5	450	11,6-11,7
							325	9,3-9,5	900	11,0-11,3
ca. 54	9,6	1190-1200					485-545	= 2,0		
②a	4,0	1230-1260								
	1350	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min				Idle		Control rod travel mm	
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	
1150	50,0-51,0 (48,5-52,5)	1190-1200*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

9.84

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F4

F4

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 SOA 3,7 a 1

1. Edition

En

PES 4 A 75 D 410/3 RS 1183
Komb.-Nr. 0 400 464 104

RSV 325-1400 A 8 B 742 - 1L

superseded by
company **Sonacome**
engine **F 4 L 912**

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,0+0,1	5,5-5,6	0,2(0,35)			
325	7,9-8,1	0,8-1,4	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 18	325	7,5	1440	11,0-11,1
	X =						100	min. 19,5	400	12,0-12,1
							325	7,9 - 8,1	800	11,7-12,0
ca. 71	10,0	1440-1450					640 - 700	2,0		
2a	4,0	1485-1515								
	1600	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1400	55,0-56,0 (53,5-57,5)	1440-1450*	800	50,0-52,0 (48,5-53,5)	-	-	-	-	

Checking values in brackets

* 1 mm less control rod travel than col 2

9.84

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 SOA 5,6 a
1. Edition

En

PES 6 A 75 D 410/3 RS 1197 RSV 325-1400 A 8 B 742-1 L
Komb.-Nr. 0 400 466 079

supersedes
company Sonacome
engine F 6 L 912

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\overset{1,9-2,0}{(1,85-2,05)}$ mm (from BPCRW = 9,0-12,0 mm)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1380	12,4+0,1	5,9-6,0	0,25(0,4)			
325	9,4-9,6	0,9-1,5	0,2(0,35)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			④ Lower rated speed Control-lever deflection in degrees 7 8 9			③ Torque control rev/min mm 10 11	
loose ca. 67 ②a	Control rod travel mm 2	Control rod travel mm rev/min 3	-	-	-	-	rev/min 8	Control rod travel mm 9	1380 500 865	12,4-12,5 13,2-13,3 12,8-13,0
	800	0,3-1,0					325	9,0		
	x = 4,75						100 325 680-740	min. 19,5 9,4-9,6 = 2,0		
	11,4	1420-1430								
	4,0	1540-1570								
	1705	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F) rev/min 1		⑥ Rotational speed limit Note changed to) rev/min 3		③a Fuel delivery characteristics rev/min cm ³ /1000 strokes 4 5		Starting fuel delivery Idle rev/min cm ³ /1000 strokes 6 7		④a Idle stop rev/min Control rod travel mm 8 9	
1380	58,5-59,5 (57,0-61,0)	1420-1430*	800	51,5-53,5 (50,0-55,0)		-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

9.84

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F6

F6

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MWM 5,9a
1. Edition

En

PES 6A80D320RS 1271

RSV 350-1500A2B2122R

Komb.-Nr. 9 407 083 274

supersedes -
company MWM
engine D 229-6
94 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,2-2,3}{(2,15-2,35)}$ mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1480	9,7-9,8	5,6-5,7	0,25(0,4)			
350	6,9-7,1	0,7-1,1	0,2 (0,35)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 18	350	6,5	1480	9,7-9,8
	X =						100	min. 19,0	1000	10,2-10,5
							350	6,9-7,1	800	10,4-10,6
ca. 51	8,7	1520-1530					650-710	= 2,0	500	10,5-10,6
2a	4,0	1555-1585					810	max. 1,0		
	1740	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery idle		4a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to 1 rev/min							
rev/min	cm ³ /1000 strokes			rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1480	55,5-56,5 (54,0-58,0)	1520-1530*		800	53,0-55,0 (51,0-57,0)	100	19,0-21,0 mm RW	350	7,0
1000	55,5-57,5 (53,5-59,5)			500	48,5-50,5 (46,5-52,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.84

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F7

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MWM 5,9 a1

1. Edition

En

PES 6 A 80 D 320 RS 1271 RSV 350-1150 A 2 B 2129-1R

Komb.-Nr. 9 407 083 281

supersedes
company MWM
engine D 229-6
77 kW (105 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,15-2,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,4-9,5	5,0-5,1	0,25(0,4)			
350	6,9-7,1	0,7-1,0	0,2(0,35)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Control lever deflection in degrees 7		Lower rated speed rev/min 8		3 Torque control rev/min 10		Control rod travel mm 11
Control rod travel mm 2	Control rod travel mm rev/min 3							Control rod travel mm 9				
lose	800	0,3-1,0	-	-	-	ca. 19		350	6,5	1150	9,4-9,5	
	X =							100	min. 19,0	900	10,3-10,5	
ca. 44	8,5	1170-1180						350	6,9-7,1	500	11,0-11,1	
2a	4,0	1210-1240						680-740	= 2,0			
	1400	0,3-1,7						800	max. 1,0			

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational speed limit Note changed to rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop rev/min 8		Control rod travel mm 9
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7				
1150	49,5-50,5 (48,0-52,0)	1170-1180*	900	51,5-53,5 (49,5-55,5)		100	19,0-21,0 mm RW	350	7,0	
			500	53,0-55,0 (51,0-57,0)						

Checking values in brackets

* 1 mm less control rod travel than col 2

9.84

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Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 EIC 5,9 b

4. Edition

En

Testoil-ISO 4113

PES 6 A 80 D 320 RS 1280 RSV 300-1150 AOB 2001 DR

Komb.-Nr. 0 400 476 071

1 - 5 - 3 - 6 - 2 - 4 je 60°

supersedes 3.84

company: Eicher

engine: EDK 6-4 Saugmotor
77 kW (105 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,10-2,30)
2,15-2,25 mm (from GDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	8,9-9,0	5,1 - 5,2	0,2(0,35)			
300	6,1-6,3	0,7 - 1,3	0,2 (0,3)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 29	300	5,7	1130	8,9-9,0
	X =	6,0					100	min.19,5	795	9,2-9,4
ca. 53	1170-1180	7,9					300	6,1-6,3	500	9,5-9,6
⑤	1215-1245	4,0					420-480	2,0		
	1380	0,3-1,7					650	max. 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1130	51,5 - 52,5 (50,0 - 54,0)	170-1180*		900	48,5 - 51,5 (47,0 - 53,0)	100	19,5-21,0 mm RW	300	6,2
				500	46,5 - 48,5 (45,0 - 50,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 1 g 10
2. Edition

En

PES 2 A 80 D 310/3 RS 1322 RSV 325-1150 A 8 B 2011-1 L

Komb.-Nr. 0 400 462 054

supersedes 6.83
company KHD
engine F 2 L 912
25 kW bei
2300 min⁻¹
tractor D 3607-
S 33

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,1+0,1	5,9-6,0	0,25(0,4)			
325	8,9-9,1	1,2-1,8	0,2(0,35)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 26	325	8,5	1150	11,1-11,2
	x = 6,0						100	min. 19,5	500	12,0-12,1
							325	8,9-9,1	1010	11,5-11,7
							690-750	=2,0		
ca. 60	9,9	1190-1200								
2a	4,0	1320-1350								
	1480	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note: changed to)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1150	59,0-60,0 (57,5-61,5)	1190-1200*	750	57,0-59,0 (55,0-61,0)	100	19,5-21,0 mm RW	-	-	

Checking values in brackets

* 1 mm less control rod travel than col 2

10.84

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F10

F40

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 STE 6,0 h 6

1. Edition

En

PE 6 A 85 D 412 RS 2303 Y
Komb.-Nr. 0 400 656 159

RQV 250-1400 AB 879 DL

supersedes

company Steyr

engine WD 612.90
154 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\overset{2,5-2,6}{(2,45-2,65)}$ mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	14,2+0,1	9,6-9,7	0,3(0,45)			
250	8,9-9,1	1,1-1,6	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1450	15,2-17,8	-	-	-	ca. 13	100	min. 10,4	200	0,5-0,7
ca. 47	13,2	1440-1450					250	8,9-9,1	600	3,3-3,7
	4,0	1580-1610					380-440	=2,0	1000	5,7-5,9
	1700	0-1,0					500	max. 1,0	1400	8,4

Torque control travel = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1400	0,7 bar 96,0-97,0 (94,0-99,0)	1440-1450*	LDA 800	0,7 bar 91,5-94,5 (89,5-96,5)	-	-	-	-
			LDA	0 bar 12,5-12,6 mm RW				

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.84

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D. Adjustment Test for Manifold Pressure Compensator

STE 6,0 h 6

- 2 -

Test at n = 1400 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE6A..RS2303Y + RQV..PA879DL	0,70	0 0,28 0,22	14,2-14,3 12,5-12,6 13,8-13,9 12,9-13,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 STE 6,0 h 5

1. Edition

En

PE 6 A 85 D 412 RS 2303 Z RQV 250-1400 AB 879 DL
Komb.-Nr. 0 400 656 153

supersedes

company Steyr

engine WD 612-68 u. -72
143 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,5-2,6$
(2,45-2,65) mm (from BDC) $RH = 9,0-12,0$

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	13,2+0,1	8,6-8,7	0,3(0,45)			
250	8,6-8,8	1,2-1,7	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1400	15,2-17,8	-	-	-	ca. 13	100	min. 8,5	200	0,5-0,7
ca. 49	12,2	1440-1450					250	6,4-6,6	600	3,3-3,7
	4,0	1585-1615					320-380	=2,0	1000	5,7-5,9
	1700	0-1,0					500	max. 1,0	1400	8,4

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1400	0,5 bar 85,5-86,5 (83,5-88,5)	1440-1450*	LDA 800	0,5 bar 80,0-83,0 (78,0-85,0)	100	133,0-143,0 (130,0-146,0)	-	-
			LDA 500	0 bar 56,0-59,0 (54,0-61,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.84

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D. Adjustment Test for Manifold Pressure Compensator

STE 6,0 h 5

- 2 -

Test at n = 1400 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE6A..RS2303Z + RQV..AB879 DL	0,50	0,17 0,15 0	13,2-13,3 12,9-13,0 12,2-12,5 12,0-12,1

Notes

(1) when n

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 KHD 6,1 g

4. Edition

En

PES 6 A 85 D 410/3 RS 2415 RQ 300/1250 AB 935 DL
Komb.-Nr. 0 400 836 024

supersedes 9.82
company: KHD
engine BF 6 L 913 T
96 kW
/ 2500 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,90-2,00
(1,85-2,05) mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,1-11,2	8,0 - 8,1	0,3(0,45)			
300	7,3-7,5	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3				Idle speed regulation Setting point rev/min 7				Torque control rev/min 11	
Control rod travel mm 2		Control rod travel mm 4		Control rod travel mm 5		Control rod travel mm 8		Control rod travel mm 10		Control rod travel mm 12	
800	19,2-10,8	800	20,0	10,1	1295-1310	300	7,4	100	min. 8,8	1250	11,1-11,2
VH = max. 64°				4,0	1365-1395			300	7,3-7,5	800	12,3-12,4
				1500	0 - 1,0			700	max. 1,0	910	12,0-12,2
								545-	585=2,0	1050	11,3-11,6

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes/mm 7	
1250	80,0 - 81,0 (78,0 - 83,0)	-		800	69,5 - 72,5 (67,5 - 74,5)	100	19,0 - 21,0 mm RW

Checking values in brackets

9.84

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F15

EAS

Test Specifications Fuel Injection Pumps and Governors

W00 001/4 KHD 5,1 d

2. Edition

En

Testoil-ISO 4113

PES 5 A 80 D 410/3 RS2526

EP/RSV 325-1150 A3 B2014DL

supersedes 5.78

Komb.-Nr. 0 400 865 016

company:

K H D

engine:

F5 L912

63kW - 85PS

1 - 3 - 5 - 4 - 2

0 - 72-144-216-288° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\frac{1,90-2,00}{(1,85-2,05)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery 2526 cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,8	5,5 - 5,6	0,2(0,35)			
325	+0,1 9,0-9,2	0,9 - 1,5	0,2(0,3)			
775/850	- - -	C, 4 - 5	0,3(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca. 21	325	5,0		+0,1
	X =	4,75					100	min. 19	1150	11,8
ca. 55	10,8	1190-1200					325	5,4-5,6	950	12,1
⑤	4,0	1235-1265					390-450	= 2,0	775	12,7
	1350	0,3 - 1,7					500	0 - 1	450	12,8

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat. Note: changed to ... rev/min 3	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F) rev/min 1	cm ³ /1000 strokes 2		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1150	55,5 - 56,5 (54,0 - 58,0)	1190-1200 *	775	57,0 - 59,0 (55,5 - 60,5)	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 DAF 8,3 n 1

3. Edition

En

Testoil-ISO 4113

PE 6 A 95 D 410 RS 2575 RSV 250-1200 A5B 2151 L
Komb.-Nr. 0 400 676 171
Specifications apply to test tubing 1 680 750 015

superseded **6.83**
company DAF
engine DH 825

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\overset{2,0 - 2,1}{(1,95 - 2,15)}$ mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1200	10,4+0,1	7,3 - 7,5	0,35(0,6)			
250	6,0-6,2	0,7 - 1,1	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3 - 1,0	-	-	-	ca. 24	250	5,6	1200	10,4+0,1
	X =	5,0					250	6,0-6,2	500	11,1+0,1
							635-695	= 2,0	800	11,1+0,1
ca. 58	9,4	1240-1250							940	10,7+0,8
⑤	4,0	1340-1370								
	1505	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1200	73,0-75,0 (71,0-77,0)	1240-1250*		800	74,5-77,5 (72,0-80,0)	100	121,5-131,5 bei 19,5- 21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.84

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 6,2 n

5. Edition

En

PE 6 A 90 D 320 RS 2577

RSV 250-750 A 7 B 2125 R

supersedes 5.84
company DAF
engine DT 615

Komb.-Nr. 0 400 676 167

Specifications apply to test tubing 1 680 750 015 !

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing difference between control-rod travel 9 mm and max. = 2,5-3,5° camshaft

Port closing at prestroke (2,15-2,35)
2,20-2,30

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
750	11,0+0,1	7,5 - 7,7	0,4 (0,55)			
250	5,9-6,1	0,8 - 1,4	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca. 15	250	6,0	-	-
	X =	5,0						**		
ca. 40	10,0	770-780					260-320	= 2,0		
2a	4,0	785-805								
	955	0,3-1,7								

The numbers denote the sequence of the tests Set idle-speed auxiliary spring at 2 mm control-rod travel.

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
750	75,0-77,0 (73,0-79,0)	760-770*	-	-	100	19,5-21,0 mm RW	-	-	

Checking values in brackets

* 1 mm less control rod travel than col 2

1084

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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 1 h

5. Edition

En

Testoil-ISO 4113

PE 6 A 95 D 410 LS2587 RQV 300-1150 AB1088L (1)
 PE 8 A 95 D 410 LS2588 RQV 300-1150 AB1088L (2)
 PE 10 A 95 D 610/4LS2589 RQV 300-1150 AB1047DL (3)
 PE 12 A 95 D 610 LS2590 RQV 300-1150 AB1047DL (4)

superseeded 6.83

company K H D

engine F 6 L 413 FW
 (1) (102kW-139 PS)
 (2) F 8 L (136kW-185 PS)
 (3) F 10 L (170kW-231 PS)
 (4) F 12 L (204kW-277 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

bei 2300 min⁻¹

Port closing at prestroke 1,50-1,60 mm (from BDC) Tunnelling or mining vehicles
 (1,45-1,65)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,0-9,2	7,8 - 8,0	0,3(0,6)			
300	6,2-6,3	1,4 - 2,0	0,3(0,5)			
800/1000	- - -	C, 4-5	0,4(0,7)			

Adj. the fuel delivery from each outlet according to the values in

B. Governor Settings

(1) 2587 mit 1088L

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 68	1150 1350	15,2-17,8 0 - 1	- -	-	-	ca. 11	100 300 610-670=2,0	min. 7,5 5,9-6,1 2,0	300 600 1190	1,2-1,3 3,1-3,4 8,5
ca. 64	8,0 4,0	1190-1200 1220-1250				320-400 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1150	77,5 - 79,5 (75,5 - 81,5)	1190-1200*	800	80,5 - 82,5 (79,0 - 84,0)	100	119,0-129,0	1150 800 500	9,0-9,1 9,5-9,6 9,5-9,6

Checking values in brackets

* 1 mm less control rod travel than col. 2

Set control-rod stop to contact at 500 min/1

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9.84

Cam sequence and angular cam spacing

1 - 6 - 5 - 4 - 3 - 2
0 - 75-120-195-240-315° (1)

1 - 8 - 7 - 2 - 6 - 5 - 4 - 3
0 - 45-90-135-180-225-270-315° (2)

1 - 10 - 9 - 4 - 3 - 6 - 5 - 8 - 7 - 2
0 - 27 - 72-99-144-171-216-243-288-315° (3)

1 - 4 - 9 - 8 - 5 - 2 - 11 - 10 - 3 - 6 - 7 - 12
0 - 15-60-75-120-135-180-195-240-255-300-315° (4)

Tolerance[±] 0,50 ([±]0,75)

B. Governor Settings

(2) 2588 mit 1088L

KHD1h

- 3 -

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1150	15,2-17,8	-	-	-	ca. 11	100	min. 7,5	300	1,2-1,3
- - -	- - -	- - -	-	-	-	-	300	5,9-6,1	600	3,1-3,4
ca. 64	8,0 4,0 1350	1190-1200 1220-1250 0 - 1,0	-	-	-	-	610-	670=2,0	1190	- 8,5
						320-400 (3a)				

Torque control travel a 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery Control rod stop Test oil temp 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1150	77,5 - 79,5 (75,5 - 81,5)	1190-1200*	800	80,5 - 82,5 (78,5 - 84,5)	100	119,0-129,0	1150 800 500	9,0-9,1 9,5-9,6 9,5-9,6
Set control-rod stop to contact at 500 min/1								

Checking values in brackets

* 1 mm less control rod travel than col 2

Test oil ISO 100

B. Governor Settings

(3) 2589 mit 1047 DL

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1150	15,2-17,8	-	-	-	ca. 11	100	min. 7,5	300	1,2-1,3
- - -	- - -	- - -	-	-	-	-	300	5,2-6,3	600	3,1-3,4
ca. 64	8,0 4,0 1350	1190-1200 1230-1260 0 - 1,0	-	-	-	-	620-680=2,0	1190	- 8,5	-
						330-410 (3a)				

Torque control travel a mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery Control rod stop Test oil temp 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1150	78,5 - 80,5 (76,5 - 82,5)	1190-1200*	800	83,0-86,0 (80,5-88,5)	100	116,5 - 126,5 (113,5-129,5) = 14,4-14,8 mm RW	1150 500 895 1030	9,1+0,1 9,6+0,1 9,4+0,2 9,1+0,3

Checking values in brackets

* 1 mm less control rod travel than col 2

En

B. Governor Settings

(4) 2590 mit 1047DL KHD1h - 4 -

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1190	15,2-17,8	-	-	-	ca. 11	100	min. 7,7	300	1,2-1,3
- - -	- - -	- - -	-	-	-	-	300	6,1-6,3	600	3,1-3,4
ca. 64	8,1 4,0 1350	1190-1200 1225-1255 0 - 1,0	-	-	-	320-425	-	-	1190	8,5
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery Control rod stop Test oil temp 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1150	78,5 - 80,5 (76,5 - 82,5)	1190-1200*	800	83,0-86,0 (80,5-88,5)	100	116,5 - 126,5 (113,5-129,5)	1150 500 900 1030	9,1+0,1 9,6+0,1 9,4+0,2 9,1+0,3

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery Control rod stop Test oil temp 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min		rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

40

WPP 001/4 KHD 6,1 h

5. Edition

En

PES 6 A 85 D 410 RS 2591

RS 325/1325 AOB 691 DL

supersedes 11.82

Komb.-Nr. 0 400 876 283

AOC 691 DL

company KHD

engine BF 6 L 913 - BW
124 kW (169 PS)
/ 2650 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,45-2,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1325	12,8-12,9	9,0-9,1	0,3(0,45)			
325	8,4-8,6	0,9-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

VH=Control lever

Vertical position = 40°

FH=Accelerator lever

Horizontal position = 40°

B. Governor Settings

[illegible]

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop		(6) Rotational-speed limit		(3a) Fuel delivery characteristics		Starting fuel delivery (5)		(4a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min				Idle		Control rod travel mm	
rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min		
1	2	3	4	5	6	7	8	9	
LDA 1325	0,7 bar 90,5-91,5 (88,5-93,5)	1365-1375*	LDA 1000	0,7 bar 85,0-88,0 (83,0-90,0)	100	104,0-114,0 =17,8- 18,2 mm RW (Electromagnet 24 V)			
		LDA 0 bar	LDA 850	0,7 bar 83,5-86,5 (81,5-88,5)					
			LDA 500	55,5-58,5 (53,5-60,5)					

Checking values in brackets

* 1 mm less control rod travel than col 2

10.84

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F23

F23

D. Adjustment Test for Manifold Pressure Compensator

KHD 6,1 h - 2 -

Test at n 500 rev/min decreasing pressure - in bar gauge pressure
 XXXXXXXXXX
 XXXXXXXXXX

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure - bar	Gauge pressure - bar	mm (1)
2591 + 691 DL	0,70	0,43 0,28 0	12,9 - 13,1 12,7 - 12,8 12,1 - 12,3 11,5 - 11,7

Notes

(1) when n

rev/min and
gauge pressure -

bar (maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 5,7 V3

9. Edition

En

PES 6 A 90 D 410 RS 2596 RSV 575-1250 A 1 B 618 L
Komb.-Nr. 0 400 876 295 A 1 C 618 L

supersedes 2.82
company Daimler-Benz
engine OM 352 A
115 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) mm (from BOW) = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1230	13,2+0,1	7,8-7,9	0,3(0,45)			
575	7,2-7,4	0,9-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 27	575	7,3	-	-
	X = 4,0						100	min. 19,0		
ca. 58	12,2	1250-1255					575	7,2-7,4		
2a	4,0	1274-1291					585-645	= 2,0		
	1445	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min	3	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
rev/min 1	cm ³ /1000 strokes 2			4	5	6	7	8	9
1230	77,5-78,5 (75,5-80,5)		1250-1255*	-	-	100	80,0-90,0 (77,0-93,0) = 16,0- 16,6 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

9.84

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Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 RAB 9,7 b

3. Edition

En

PES 6 A 95 D 420 LS 2595 RQ 200/1100 AB 1094-1 R
Komb.-Nr. 0 400 846 514

supersedes 5.84

company: RABA

engine: D 2356 HM 6 U
162 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(1,95-2,15)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,3+0,1	12,1-12,3	0,3(0,6)			
200	6,0-6,2	0,8-1,4	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control					
①		Setting point		Test specifications		④		Setting point		Test specifications		⑤		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	10	11	12				
550 VH =	19,2-20,8 max. 46°	550	20,0	10,3 4,0	1145-1160 1175-1205	200	6,0	100 200 310- 400	min. 8,0 6,4-6,6 350=2,0 max.1,0	1100 500 750 855	11,3-11,4 11,9-12,0 11,7-11,9 11,5-11,7				

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 5,7x3

En

3. Edition

Testoil-ISO 4113

PES 6 A 90 D 410 RS 2596 RSV 350-1400 AOB 1148 L

Komb.-Nr. 0 400 876 313

supersedes 6.83

company Daimler Benz

engine OM 352 A

115 kW (156 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke (1,95-2,15)
2,00-2,10 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1380	11,3+0,1	7,1 - 7,2	0,3(0,45)			
350	7,9+0,2	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3 - 1,0	-	-	-	ca. 22	350	7,5	1380	11,3+0,1
	x =	5,0					100	min. 19	800	12,3+0,1
ca. 66	1430-1440 =	10,3					350	7,9-8,1	1200	11,6+0,1
⑤	1510-1540 =	4,0					530-590 =	2,0		
	1620 =	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
LDA 1380	0,7 bar 71,0-72,0 (69,0-74,0)	1430-1440*	LDA 700	0,7 bar 67,0-69,0 (64,5-71,5)	100	78,0- 88,0 bei 15,6- 16,0 mm RW			
			LDA 500	0 bar 58,0-59,0 (56,0-61,0)					

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

MB 5,7 x 3 -2-

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
RS 2596 with AOB 1148 L	0,70	0 0,38	12,3-12,4 11,8-11,9 12,0-12,1

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Testing the hydraulic start-locking device

Locking at 0,4 - 0,5 bar

Unlocking at 0,15 - 0,25 bar

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 4,7 c
4. Edition

En

PES 5 A 80 D 410/3 RS 2603 RS 325/1650 AOB 2087 L
Komb.-Nr. 0 400 865 023 AOC 2087 L

supersedes 5,84
company KHD
engine F 5 L 912
54 kW (73 PS)
3000 min⁻¹
A power output

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 -2,0 mm (from BDC)
(1,85-2,05)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1490	9,9-10,0	5,1-5,2	0,2(0,35)			
325	8,7-8,9	1,7-2,1	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	VHmax.	325	8,8	-	-
VHca.49	8,9	1690-1700	●			FHca.18	100	min.13,6		
FH	4,0	1740-1770					325	8,7-8,9		
②a max.	1900	0,3-1,7					550	590=2,0		
							600	max.1,8		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp 40°C (104°F)		Note: changed to) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	cm ³ /1000 strokes 5	6	rev/min 7	cm ³ /1000 strokes 8	rev/min 9	Control rod travel mm 10
1490	50,5-51,5 (49,0-53,0)	1690-1700*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

9.84

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Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 KHD 12,7 p1

1. Edition

En

PE8A95D 410 LS 2608 RQ 300/1250 AB 929 L

Komb.- Nr. 0 400 648 140

1-8-7-2-6-5-4-3 je $45^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$

supersedes -

company: KHD

engine: F8L413 F

157 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,0-2,1
(1,95-2,15)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	9,3-9,4	8,6-8,8	0,35(0,6)			
300	6,4-6,6	1,2-1,8	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in .

Testoil-ISO 4113

B. Governor Settings

Checking oil slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 9 rev/min 10		Torque control rev/min 11		Control rod travel mm 12
600	15,6-16,4	600	16,0	8,3 4,0	1295-1310 1345-1375	300	6,5	100 300 410-450	min.8,0 6,4-6,6 =2,0	1250 650 945 1020	9,3-9,4 9,7-9,8 9,5-9,7 9,3-9,6	

Torque-control travel
on flyweight assembly dimension a = 0,40 mmSpeed regulation: AI 1295-1310 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6		Control rod travel mm 7
1250	85,5-87,5 (83,5-89,5)	-	-	750	78,5-81,5 (76,0-84,0)	-	-	-

Checking values in brackets

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 12,7 p

3. Edition

En

PE 8 A 95 D 410 LS 2608 RQV 300-1100 AB 1126 L

Komb.-Nr. 0 400 648 128

1-8-7-2-6-5-4-3 je $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$ supersedes 5.84
KHD

company: F 8 L 413 F

engine: 133 kW/2200 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	9,5-9,6	8,8-9,0	0,35(0,6)			
300	5,9-6,1	0,9-1,9	0,35(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 14	100 300	min. 7,5 5,9-6,1	250 530 820 1100	1,1-1,3 3,6-4,2 5,8-6,0 8,1
ca. 44	8,5 4,0 1345	1140-1150 1195-1225 0-1,0				355-415 (3a)				

Torque control travel a = 0,6 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	88,0-90,0 (86,0-92,0)	1140-1150*	700	90,5-93,5 (88,0-96,0)	100	120,0-130,0 (117,0-133,0) 14,0-14,4 mm RW	1100 500 825 975	9,5-9,6 0,1+0,1 9,9+0,2 9,6-9,9

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.84

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MWM 6,2 e 2

1. Edition

En

PES 6 A 90 D 320/3 RS 2660 RSV 325-1200 A00 2182 R

Komb.-Nr. 0 400 866 114

superseded by
MWM
company TD 226 B-6
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,95-3,05$
($2,90-3,10$) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	9,0-9,1	7,5-7,6	0,3(0,45)			
325	7,4-7,6	2,6-3,4	0,25(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 25	325	7,0	1200	9,0-9,1
	x = 5,0						325	7,4-7,6	500	9,9-10,0
ca. 51	8,0	1240-1250					345-605	=2,0	860	9,5-9,7
2a	4,0	1300-1330								
	1465	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery idle		5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min									
rev/min 1	cm³/1000 strokes 2	3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9			
1200	74,5-75,5 (72,5-77,5)	1240-1250*	500	59,5-60,5 (57,5-62,5)	100	133,0-143,0 (130,0-146,0) =19,5-21,0 mm RW	0 -	-			

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 1 o

4. Edition

En

Testoil-ISO 4113

 PES 6 A 95 D 410 RS 2625
 Komb.-Nr. 0 400 876 305

 RSV 325-1150 A88 674 DL
 A8C 674 L

supersedes 3.84

company: KHD

 engine: B F 6 L 913 B
 Bagger

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\overset{1,9 - 2,0}{(1,85 - 2,05)}$ mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1150	11,4+0,1	8,0 - 8,2	0,3(0,6)			
325	7,2-7,4	1,6 - 2,2	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800 X =	0,3-1,0 3,0	-	-	-	ca. 15	325	6,8	1150 500 1000	11,4+0,1 12,1+0,1 11,8+0,2
⑤ ca. 50	10,4 4,0 1325	1190-1200 1265-1295 0,3 - 1,7					325 585-645 = 2,0	7,2-7,4 = 2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
LDA 1150	0,7 bar 80,0 - 82,0 (78,0 - 84,0)	1190-1200*	LDA 800	0,7 bar 83,0-86,0 (80,5-88,5)	100	116,5-126,5 (113,5-129,5) = 15,9 - 16,4 mm RW			
			LDA 500	0 bar 56,5 - 59,5 (54,5 - 61,5)					

Checking values in brackets

* 1 mm less control rod travel than col. 2

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

KHD 1 0 -2-

Testoil-ISO 4113

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 A..RS 2625 with.. A8B 674 DL .. A8C 674 L	0,7	0 0,36 0,2	12,2 - 12,3 11,1 - 11,2 11,9 - 12,0 11,1 - 11,3

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VAU 5,4 a 1

1. Edition

En

PES 6 A 95 D 320 RS 2646
Komb.-Nr. 0 400 846 533

RQV 300-1300 AB 1163-1 R

supersedes
company Vauxhall
engine 330 T/C

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,5-2,6}{(2,45-2,65)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
810	9,7-9,8	6,4-6,6	0,35(0,6)			
300	5,9-6,1	0,8-1,4	0,35(0,5)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1440	15,2-17,8	-	-	-	ca. 17	100	min. 7,4	275	0,9-1,1
ca. 61	8,7 4,0 1600	1350-1360 1455-1485 0-1,0				350-490	300	5,9-6,1	500	1,1-3,5
									1000	5,7-5,8
									1300	8,0

Torque/control travel = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) rev/min 1		Rotational speed limitation intermediate speed rev/min 3		Fuel delivery characteristics high idle speed rev/min 4		Starting fuel delivery idle switching point rev/min 6		Torque-control travel rev/min 8	
cm ³ /1000 strokes 2	cm ³ /1000 strokes 5	cm ³ /1000 strokes 3	cm ³ /1000 strokes 5	cm ³ /1000 strokes 5	cm ³ /1000 strokes 7	Control rod travel mm 9	Control rod travel mm 9	Control rod travel mm 9	Control rod travel mm 9
810	63,5-65,5 (61,5-67,5)	1350-1360*	1200	71,5-74,5 (69,5-76,5) 52,0-55,0 (50,0-57,0)	100	86,5-96,5 (83,5-99,5) = 19,5-21,0 mm RW	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.84

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G 11

Test Specifications Fuel Injection Pumps ② and Governors

En

PES 6 A 95 D 410 LS 2669
Komb.-Nr. 0 400 846 523

RQ 750 AB 1172 L

supersedes -
company: MAN
engine D 2566 ME
114 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\overset{1,5-1,6}{(1,45-1,65)}$ mm (from BDC) cyl. 6; RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,1+0,1	11,8-12,0	0,35(0,6)			
250	5,9-6,1	0,9-1,5	0,35(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 4		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 8		Torque control rev/min 11		Control rod travel mm 12	
	Control rod travel mm 2												
-	-	-	-	11,0 4,0	750-755 775-785	-	-	-	-	-	-	-	-

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

750-755 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
	cm ³ /-1000 strokes 2				cm ³ /-1000 strokes 5		cm ³ /1000 strokes/mm 7
700	118,0-120,0 (116,0-122,0)	-	-	-	-	-	-

Checking values in brackets

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 8,0 o

1. Edition

En

PES 5 A 95 D 410 RS 2680 RQV 300-1150 AB 1088-1 L
Komb.-Nr. 0 400 845 080

supersedes
comp. KHD
engine F 5 L 413 FRW
85 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{1,5-1,6}{(1,45-1,65)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,0-9,1	7,2-7,4	0,35(0,6)			
300	6,4-6,6	1,3-1,7	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1200	15,2-17,8	-	-	-	ca. 12	100	min. 8,0	250	0,5-0,8
ca. 58	8,0	1190-1200					300	6,4-6,6	550	2,9-3,1
	4,0	1235-1265							850	4,7-5,0
	1350	0-1,0				315-425			1150	7,9
						③a				

Torque control travel a = 1,4 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10
1150	72,0-74,0 (70,0-76,0)	1190-1200*	600	80,5-83,5 (78,0-86,0)	100	115,0-125,0 (112,0-128,0)	1150	9,0-9,1	
			650	98,5-101,5 (96,0-104,0)		= 14,0-14,6 mm RW	500	10,4+0,1	
			**				800	10,0+0,2	
							1000	9,2-9,5	

Checking values in brackets

* 1 mm less control rod travel than col. 2

** Adjusted with the full-load stop unblocked.
Solenoid switched off.

8.84

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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 9,6 m

1. Edition

En

PES 6 A 95 D 410 RS 2681 RQV 300-1150 AB 1088-1 L

Komb.-Nr. 0 400 846 530

supersedes -

company: KHD

engine: F 6 L 413 FRW

102 kW

Tunnelling or mining vehicles

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{1,5-1,6} (1,45-1,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,0-9,1	7,9-8,1	0,35(0,6)			
300	6,4-6,6	1,3-1,7	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in .

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm/rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 12	100	min. 8,0	250	0,5-0,8
ca. 58	8,0 4,0 1350	1190-1200 1230-1260 0-1,0				310-450	300	6,4-6,6	550 850 1150	2,9-3,2 4,7-5,0 7,9

Torque control travel \pm 0,7 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1150	79,0-81,0 (77,0-83,0)	1190-1200*	650	80,5-83,5 (78,0-86,0)	100	120,0-130,0 (117,0-133,0)	1150 650 800 1000	9,0-9,1 9,7-9,8 9,5-9,7 9,0-9,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 LIE 5,6 a

1. Edition

En

PES 4 A 95 D 410 RS 2685

RSV 400-1000 A 1 C 2187 L

Komb.-Nr. 0 400 874 238

supersedes
company Liebherr
engine D 904 NA
70 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,7-2,8}{(2,65-2,85)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,7-9,8	7,9-8,1	0,35(0,6)			
400	6,1-6,3	1,0-1,6	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Control-lever deflection in degrees 7		Lower rated speed rev/min 8		3 Torque control rev/min 10		Control rod travel mm 11
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6			Control rod travel mm 9				
800	0,3-0,7		-	-	-	ca. 23		400	5,7	1000	9,7-9,8	
$x = 2,5$								400	6,1-6,3	550	9,7-9,9	
ca. 50	8,7	1040-1050						455-515	5=2,0	430	10,9-11,5	
1230	0,3-1,4											

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40° C (104°F) rev/min 1		5 Rotational-speed limit Note changed to rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		4a Idle stop rev/min 8		Control rod travel mm 9
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7				
1000	79,0-81,0 (77,0-83,0)	1040-1050*	600	66,5-69,5 (64,0-72,0)		100	125,0-135,0 (122,0-138,0) =15,5-15,7 mm RW	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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8.84

Test ISO 4113

G15

615

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,2 d

2. Edition

En

Test: 01-30 4113

 PES 4 M 55 C 320 RS 152-1
 RSF 375/2250 M 56

Komb.Nr. 0 400 074 96 3/ Sales model 0 400 074 962

1- 3- 4 - 2

0-90-180-270

supersedes 4.84

company Daimler-Benz

engine OM 601

54 kW

U.S.A.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Note: Before starting testing, observe the e
 important instructions on the reverse.

Port closing at prestroke

 2,00-2,10
 (1,95-2,15)

mm (from BDC)

Control rod travel

RW = 20,0-22,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1000	13,1+0,1	3,4-3,5	0,25(0,3)			
375	6,4-6,6	0,5-0,6	0,10(0,15)			
1800			0,25(0,3)			
2200			0,25(0,3)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
1	mm	rev/min	4	mm	rev/min	7	rev/min	mm
2	3		5	6			8	9
8-12°	① min. 12,5	250	50°	⑦ 12,3-12,5	2200		⑫ 100	min. 20,6
	② 6,4-6,6	375		⑧ 8,8-9,2	2500		⑬ 1800	12,7-12,9
	③ **	400		⑨ -			⑭ 1000	13,1-13,2
	④ -			⑩ 0-1,0	2950			
	⑤ 2,5	630-730		⑪			⑥	Switching point

C. Settings for Fuel Injection Pump with Governor Mounted

Full load delivery		⑬	Full load speed regulation		⑭	Variations in fuel delivery		⑮	Starting fuel delivery		⑯	Difference		⑰
Test oil temp 40°C (104°F)									Idle					
rev/min	cm ³ /1000 strokes		rev/min			rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes		cm ³ /1000 strokes		
1	2		3			4	5		6	7		8		
2200	36,0-38,0 (35,0-39,0)		2500*	8,8-9,2		1800	36,0-37,5 (35,0-38,5)		100	min. 55		6,0		⑫a
									375	5,0-6,0 (4,5-9,0)		1,0 (1,5)		⑬
						1000	34,0-35,0 (33,0-36,0)		2500	21,0-25,0 (20,0-26,0)		2,5 (3,0)	sieht Pkt. 8 a	⑭

Checking values in brackets

ca. 1 mm less control rod travel than in Column 2

6.84

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1. ** Adjust the idle speed auxiliary spring at $N = 400 \text{ min}^{-1}$ in such a way that the control-rod travel is overpressed by 0.1 - 0.2 mm.
2. Adjusting the idle control lever position
At 1000 min^{-1} , control-rod travel 1.9 - 2.0 mm.
3. Checking the idle speed auxiliary spring cut-off
Control lever position 46° . After the switchoff point (from the starting curve) up to 1000 min^{-1} , no change in control-rod travel. Control lever position 30° . Rotational speed range $600\text{-}800 \text{ min}^{-1}$, control-rod travel 10.0 mm.
4. Checking the pneumatic shut-off unit
Control lever at idle stop.
 $n = 375 \text{ min}^{-1}$ and $p_u = 450 \text{ mbar}$ (vacuum) (338 mm Hg), the control-rod must move quickly to control-rod travel = 0 mm.
5. Overflow valve 1 469 990 351
6. * Offsetting (difference) of start of fuel delivery between the maximum/minimum value 1° camshaft.
7. Adjust idle on the pneumatic idle speed boost box. In so doing release the lock nut.
8. Adjusting the pneumatic idle speed boost (PLA):
At 0.4 bar vacuum, $n = 425 \text{ min}^{-1}$, control-rod travel 8.0 - 9.6 mm (11-19 ccm/1000 strokes).
9. Checking for leaks (checking vacuum) in the PLA box
Trigger the PLA box with 0.8 bar vacuum via the three-way valve and pressure gauge. Using the 3-way valve, cut off the vacuum supply from the PLA and pressure gauge. Allowable pressure drop 30 mbar in 15 s.
10. FBG Adjustment
FBG adjustment and interlocking according to the average value for start of delivery from all cylinders, 19.5 ± 0.2 (0.3) $^\circ$ camshaft after cyl. 1.
11. Checking the regulator using the altitude-pressure compensator aneroid box

Rotational speed (min^{-1})	Pressure (absolute) (mbar)	Control deviation from max. Control-rod travel (mm)
1 000	840	1.0 - 1.2 (0.95 - 1.25)
1 000	930	0.0 - 0.4 (0.0 - 0.45)
1 000	700	2.1 - 2.5 (2.05 - 2.55)
12. Pin projection = $16.55 \pm 0.55 \text{ mm}$

Test Specifications Fuel Injection Pumps and Governors

40

WPP 00 1/4 MB 3,0 m

3. Edition
En

PES 5 MW 55/320 RS 16
RW 375/2200 MW 28-1
0 403 245 013
0 403 245 014 - Sales model

supersedes 11.82
company Daimler Benz
engine OM 617 A

Note: Before starting testing, observe the important instructions on the reverse.

Use overflow valve 1 417 413 012
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,10-2,20

mm (from BDC)

Control rod travel

ohne ALDA

(2,05-2,25)

19,5-22,5

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1000	13,5+0,1	5,15 - 5,25	0,25(0,3)			
365	5,7-5,8	1,0-1,1	0,10(0,15)			
1600			0,25(0,3)			
2180			0,25(0,3)			

Set uniform delivery according to the values in []

Checking values in brackets

B. Governor Settings

ohne ALDA

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
1	mm	rev/min	4	mm	rev/min	7	rev/min	mm
2	3		5	6			8	9
27-31	① min. 11 ② max. 11 ③ 5,7-5,8 ④ ** ⑤ -	100 320 365 - -	69	⑦ 12,1-12,3 ⑧ ⑨ 11,2 ⑩ 4,0 ⑪ 0,0-1,0	2180 2300-2320 2620-2720 2950		⑫ 100 ⑬ 1600 ⑭ 1000 ⑮ Switching point ⑯ 260-310(240-330)	20,5-21,5 13,1-13,3 13,5-13,6

C. Settings for Fuel Injection Pump with Governor Mounted

ohne ALDA

Full-load delivery		Full-load speed regulation		Variations in fuel delivery		Starting fuel delivery		Difference
Test oil temp 40°C (104°F)						Idle		
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes
1	2	3		4	5	6	7	8
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2290-2330)		1600	51,5-53,0 (50,5-54,0)	100	min. 55,0 (52,0)	6,0
				1000	51,5-52,5 (50,5-53,5)	365	10,0-11,0 (8,5-12,5)	1,0 (1,5)
						375	(5,5-9,5)++	(1,5)
						2550	24,0-30,0 (23,0-31,0)	2,5 (3,0)

Checking values in brackets

* 1 mm less control rod travel than in Column 2

8.84

Testoil-ISO 4113

BOSCH

Geschäftsbereich KM Kundendienst Kfz-Ausrüstung
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Testing with ALDA

Point	min ⁻¹	cm ³ /1000 strokes	Control-rod travel	Pressure (absolute)
18	1000	51,5-52,5 (50,5-53,5)	13,5 - 13,6	1733 mbar (1300 mmHg)
18a	*** 1000	41,0-43,0 (40,0-44,0)	-	1067 mbar (800 mmHg)
19	2180	50,0-52,0 (49,0-53,0)	12,1 - 12,3	1733 mbar (1300 mmHg)
12a	100	min. 55	20,5 - 21,5	1733 mbar (1300 mmHg)
15	365	10,0-11,0 (8,5-12,5)	5,7 - 5,8	986 mbar (740 mmHg)

1. Setting the idle stage

Text replaces Section 4.1 of Test Instructions VDT-W-420/300 En Supplement 2, 2. Edition.

Set control lever at advance angle 69°. Drive injection pump at 1000 min⁻¹. Screw the spring retainer in until control-rod travel 13.5 - 13.6 mm is reached.

Set control lever at advance angle 49°. Drive injection pump at 1000 min⁻¹. Control-rod travel 8.8 - 9.5 mm must be reached.

2. Setting the lower rated speed

Text replaces Section 4.3 of Test Instructions VDT-W-420/300 En Supplement 2, 2 Edition.

Drive injection pump at $n = 800 \text{ min}^{-1}$. Move the control lever back until control-rod travel 1.0 - 1.3 mm is reached.

The resulting control lever deflection must lie within the permissible limits. Fix the control lever in this position. Drive the injection pump at speed as per point 2, Section B of the Test Specification Sheet. Set the control-rod travel at adjusting screw (28).

3. Setting the idle auxiliary spring (70)

** Set the idle auxiliary spring so that it just touches at $n = 520 - 550 \text{ min}^{-1}$ at the end of the characteristic curve.

4. Setting the sensing lever

Move the control lever to the full-load stop.
Drive the injection pump at $n = 375 \text{ min}^{-1}$. Set the sensing lever so that the control-rod travel lies 0.1 (0.1 - 0.2) mm over full-load control-rod travel at $n = 1000 \text{ min}^{-1}$.

5. *** Correction of the injected fuel quantity at the correction screw of the ALDA aneroid box. Max. correction $\pm 0.75 \text{ mm}$ control-rod travel.
6. Pin projection = $16.65 \pm 0.1 \text{ mm}$.
7. Stop - check: Drive the injection pump at $n = 200 \text{ min}^{-1}$. Overbridge the elastic idle stop. The resulting control-rod travel may be at most 5 mm.
8. Check the pneumatic shutoff: Control lever in idle position. Drive the injection pump at $n = 375 \text{ min}^{-1}$. At $P_u = 450 \text{ bar}$ (338 mmHg) (vacuum) control rod must return quickly to control-rod travel 0 mm.
9. Range of adjustment idle - full load = $38 - 42^\circ$.
10. ** Idle checking point.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,0 t

2. Edition

En

PES 5 MW 55/320 RS 16 RW 375/2200 MW 28-3
0 403 245 020
0 403 245 021 - Sales model

supersedes 2.83
company Daimler-Benz
engine OM 617 A-USA
92 kW (125 PS)

Test ISO 4113

Note: Before starting testing, observe the important instructions on the reverse.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Start-of-delivery adjustment and
blocking 19.5° after start-of-
delivery cylinder 1.
Control rod travel

A. Fuel Injection Pump Settings

Port closing at prestroke 2,10-2,20 mm (from BDC)
(2,05-2,25)
ohne ALDA 19,5-22,5

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1000	13,5+0,3	5,15-5,25	0,25(0,3)			
365	5,7-5,8	1,0-1,1	0,1 (0,15)			
1600			0,25(0,3)			
2180			0,25(0,3)			

Set uniform delivery according to the values in []

Checking values in brackets

B. Governor Settings

ohne ALDA

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
1	mm	rev/min	4	mm	rev/min	7	rev/min	mm
27-31	min. 11	100	69	12,1-12,3	2180		100	20,5-21,5
(1)	max. 11	320	(7)			(12)		
(2)	5,7-5,8	365	(8)	11,2	2300-2320	(13)	1600	13,1-13,3
(3)	**		(9)	4,0	2620-2720	(14)	1000	13,5-13,6
(4)	-	-	(10)	0,0-1,0	2950			
(5)	-	-	(11)	-	-	(6)	Switching point	
							260-310 (240-330)	

C. Settings for Fuel Injection Pump with Governor Mounted

ohne ALDA

Full-load delivery (19)		Full-load speed regulation (8a)	Variations in fuel delivery (17)		Starting fuel delivery idle (18)		Difference	
Test oil temp 40°C (104°F)								
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes	
1	2	3	4	5	6	7	8	
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2290-2330)	1600	51,5-53,0 (50,5-54,0)	100	min. 55,0 (52,0)	6,0	(12a)
			1000	51,5-52,5 (50,5-53,5)	365	10,0-11,0 (8,5-12,5)	1,0	(15)
					375	(5,5-9,5) ++	(1,5)	
					2550	24,0-30,0 (23,0-31,0)	2,5	(16)
							(3,0)	

Checking values in brackets

* 1 mm less control rod travel than in Column 2

Testing with ALDA

Point	min ⁻¹	cm ³ /1000 strokes	Control-rod travel	Pressure (absolute)
18	1000	51,5-52,5 (50,5-53,5)	13,5 - 13,6	1733 mbar (1300 mmHg)
18a	*** 1000	41,0-43,0 (40,0-44,0)	-	1067 mbar (800 mmHg)
19	2180	50,0-52,0 (49,0-53,0)	12,1 - 12,3	1733 mbar (1300 mmHg)
12a	100	min. 55	20,5 - 21,5	1733 mbar (1300 mmHg)
15	365	10,0-11,0 (8,5-12,5)	5,7 - 5,8	986 mbar (740 mmHg)

1. Setting the idle stage

Text replaces Section 4.1 of Test Instructions VDT-W-420/300 En Supplement 2, 2. Edition.

Set control lever at advance angle 69°. Drive injection pump at 1000 min⁻¹. Screw the spring retainer in until control-rod travel 13.5 - 13.6 mm is reached.

Set control lever at advance angle 49°. Drive injection pump at 1000 min⁻¹. Control-rod travel 8.8 - 9.5 mm must be reached.

2. Setting the lower rated speed

Text replaces Section 4.3 of Test Instructions VDT-W-420/300 En Supplement 2, 2 Edition.

Drive injection pump at $n = 800 \text{ min}^{-1}$. Move the control lever back until control-rod travel 1.0 - 1.3 mm is reached.

The resulting control lever deflection must lie within the permissible limits. Fix the control lever in this position. Drive the injection pump at speed as per point 2, Section B of the Test Specification Sheet. Set the control-rod travel at adjusting screw (28).

3. Setting the idle auxiliary spring (70)

** Set the idle auxiliary spring so that it just touches at $n = 520 - 550 \text{ min}^{-1}$ at the end of the characteristic curve.

4. Setting the sensing lever

Move the control lever to the full-load stop.
Drive the injection pump at $n = 375 \text{ min}^{-1}$. Set the sensing lever so that the control-rod travel lies 0.1 (0.1 - 0.2) mm over full-load control-rod travel at $n = 1000 \text{ min}^{-1}$.

5. *** Correction of the injected fuel quantity at the correction screw of the ALDA aneroid box. Max. correction $\pm 0.75 \text{ mm}$ control-rod travel.
6. Pin projection = $16.65 \pm 0.1 \text{ mm}$.
7. Stop - check: Drive the injection pump at $n = 200 \text{ min}^{-1}$. Overbridge the elastic idle stop. The resulting control-rod travel may be at most 5 mm.
8. Check the pneumatic shutoff: Control lever in idle position. Drive the injection pump at $n = 375 \text{ min}^{-1}$. At $P_u = 450 \text{ bar}$ (338 mmHg) (vacuum) control rod must return quickly to control-rod travel 0 mm.
9. Range of adjustment idle - full load = $38 - 42^\circ$.
10. ** Idle checking point.

Test Specifications Fuel Injection Pumps and Governors

VDT-WPP 001/4

2. Edition

En

Testoil-ISO 4113

PES 6 A 100 D 410 RS 3020

EP/RSV 400-1100 A 7 B 700 L

superseded 10.74

company John Deere

engine 6404 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,0 + 0,1

mm (from BDC);

Port closing mark 14°
after port closing.

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	7,5 - 8,3				
	6 12	3,2 - 4,2 12,4 - 13,4				
200	9	4,0 - 5,2				

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 66	1100 1120	12,0 6,2	without auxiliary spring			ca. 26	400	6,3	1080	0
⑤	1100	11,5-12,5					150	19 - 21	-	-
	1140	2,0- 5,0					400	6,0-6,6		
	1240	0,3- 1,0					430	3,0-4,6		
							500	0 - 1		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1080	107,5-109,5	1110-1120*				100	15,6-17,6	400 cm ³	11,5-15,5 / 1000
				1150	11,5 - 21,5				

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps and Governors

PES 5 MW 55/320 RS 16

RW 375/2200 MW 29-1

0 403 245 022

0 403 245 023 - Sales model

supersedes 9.82

company Daimler-Benz

engine OM 617A-USA

92 kW (125 PS)

Note: Before starting testing, observe the important instructions on the reverse.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Start-of-delivery adjustment and blocking 19.5° after start-of-delivery cylinder 1.

A. Fuel Injection Pump Settings

Port closing at prestroke 2,10-2,20
(2,05-2,25) mm (from BDC)

ohne ALDA

19,5-22,5

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1000	13,5±0,1	5,15-5,25	0,25(0,3)			
365	5,7-5,8	1,0-1,1	0,1 (0,15)			
1600			0,25(0,3)			
2180			0,25(0,3)			

Set uniform delivery according to the values in []

Checking values in brackets

B. Governor Settings

ohne ALDA

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
1	mm	rev/min	4	mm	rev/min	7	rev/min	mm
2	3		5	6			8	9
27-31	① min. 11	100	69	⑦ 12,1-12,3	2180		⑫ 100	min. 55
	② max. 11	320		⑧ 11,2	2300-2320		⑬ 1600	13,1-13,3
	③ 5,7-5,8	365		⑨ 4,0	2620-2720		⑭ 1000	13,5-13,6
	④ **			⑩ 0,0-1,0	2950			
	⑤ -	-		⑪ -	-			
							⑮ Switching point	
							280-310(240-330)	

C. Settings for Fuel Injection Pump with Governor Mounted

ohne ALDA

Full load delivery		Full load speed regulation		Variations in fuel delivery		Starting fuel delivery		Difference
Test oil temp 40° C (104 F)						Idle		
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes	
1	2	3	4	5	6	7	8	
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2290-2330)	1600	51,5-53,0 (50,5-54,0)	100	min. 55,0	6,0	(12a)
			1000	51,5-52,5 (50,5-53,5)	365	10,0-11,0 (8,5-12,5)	1,0	(15)
					375	(5,5-9,5)++	(1,5)	
					2550	24,0-30,0 (23,0-31,0)	2,5 (3,0)	

Checking values in brackets

* 1 mm less control rod travel than in Column 2

Test Bench

Testing with ALDA

Point	min ⁻¹	cm ³ /1000 strokes	Control-rod travel	Pressure (absolute)
18	1000	51,5-52,5 (50,5-53,5)	13,5 - 13,6	1733 mbar (1300 mmHg)
18a	*** 1000	41,0-43,0 (40,0-44,0)	-	1067 mbar (800 mmHg)
19	2180	50,0-52,0 (49,0-53,0)	12,1 - 12,3	1733 mbar (1300 mmHg)
12a	100	min. 55	20,5 - 21,5	1733 mbar (1300 mmHg)
15	365	10,0-11,0 (8,5-12,5)	5,7 - 5,8	986 mbar (740 mmHg)

1. Setting the idle stage

Text replaces Section 4.1 of Test Instructions VDT-W-420/300 En Supplement 2, 2. Edition.

Set control lever at advance angle 69°. Drive injection pump at 1000 min⁻¹. Screw the spring retainer in until control-rod travel 13.5 - 13.6 mm is reached.

Set control lever at advance angle 49°. Drive injection pump at 1000 min⁻¹. Control-rod travel 8.8 - 9.5 mm must be reached.

2. Setting the lower rated speed

Text replaces Section 4.3 of Test Instructions VDT-W-420/300 En Supplement 2, 2 Edition.

Drive injection pump at $n = 800 \text{ min}^{-1}$. Move the control lever back until control-rod travel 1.0 - 1.3 mm is reached.

The resulting control lever deflection must lie within the permissible limits. Fix the control lever in this position. Drive the injection pump at speed as per point 2, Section B of the Test Specification Sheet. Set the control-rod travel at adjusting screw (28).

3. Setting the idle auxiliary spring (70)

** Set the idle auxiliary spring so that it just touches at $n = 520 - 550 \text{ min}^{-1}$ at the end of the characteristic curve.

4. Setting the sensing lever

Move the control lever to the full-load stop.
Drive the injection pump at $n = 375 \text{ min}^{-1}$. Set the sensing lever so that the control-rod travel lies 0.1 (0.1 - 0.2) mm over full-load control-rod travel at $n = 1000 \text{ min}^{-1}$.

5. *** Correction of the injected fuel quantity at the correction screw of the ALDA aneroid box. Max. correction $\pm 0.75 \text{ mm}$ control-rod travel.
6. Pin projection = $16.65 \pm 0.1 \text{ mm}$.
7. Stop - check: Drive the injection pump at $n = 200 \text{ min}^{-1}$. Overbridge the elastic idle stop. The resulting control-rod travel may be at most 5 mm.
8. Check the pneumatic shutoff: Control lever in idle position. Drive the injection pump at $n = 375 \text{ min}^{-1}$. At $P_u = 450 \text{ bar}$ (338 mmHg) (vacuum) control rod must return quickly to control-rod travel 0 mm.
9. Range of adjustment idle - full load = $38 - 42^\circ$.
10. ** Idle checking point.

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 VOL 4,5 g

2. Edition

En

PES 4 MW 100/320 RS 1102
RSV 300-1000 MW 1 A 315

0 403 474 001

superseded by 7.84
Volvo
company TD 45
engine 84 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,80-2,90$
($2,75-2,95$) mm (from BDC) bei RW = $9,0-12,0$ mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
700*	12,1+0,1	11,3-11,5	0,35(0,6)			
300	5,6-5,7	1,3-1,7	0,35(0,55)			
1000	12,1+0,1		0,55(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca. 12	300	5,1-5,2		
							300	5,6-5,7		
							360-420	2,0		
ca. 52	11,1	1040-1050								
②a	4,0	1055-1085								
	0,3-1,7	1200								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	rev/min 5	cm ³ /1000 strokes	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
700	113,0-115,0 (111,0-117,0)	1040-1050*	1000	112,0-116,0 (110,0-118,0)		300	13,0-17,0 (10,5-19,5)	300	5,6-5,7

* At the minimum full-load stop, set a control-rod travel of 12.6-12.7 mm with n = 1000 min/1. At the maximum full-load stop, make the full-load adjustment according to test specifications.

Checking values in brackets

* 1 mm less control rod travel than col 2

8.84

BOSCH

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Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,0 t 2

2. Edition

En

Testoil-ISO 4113

PES 5 MW 55/320 RS 16-1 RW 375/2200 MW 28-3

0 403 245 025

0 403 245 026- Sales model

superseded by 6.84

company Daimler-Benz

engine OM 617 A-USA
92 kW (125=PS)

Note: Before starting testing, observe the important instructions on the reverse.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers. Start-of-delivery adjustment and blocking 19.5° after start-of-delivery cylinder 1.

A. Fuel Injection Pump Settings

Port closing at prestroke 2,10-2,20
(2,05-2,25) mm (from BDC) 19,5-22,5 Control rod travel
ohne ALDA

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1000	13,5+0,1	5,15-5,25	0,25 (0,3)			
365	5,7-5,8	1,0-1,1	0,1 (0,15)			
1600			0,25 (0,3)			
2180			0,25 (0,3)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

ohne ALDA

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
1	mm	rev/min	4	mm	rev/min	7	rev/min	mm
27-31	min. 11	100	69	12,1-12,3	2180		100	20,5-21,5
	max. 11	320					1600	13,1-13,3
	5,7-5,8	365		11,2	2300-2320		1000	13,5-13,6
	★			4,0	2620-2720			
	-	-		0,0-1,0	2950			
	-	-		-	-			
							Switching point 260-310 (240-330)	

C. Settings for Fuel Injection Pump with Governor Mounted

ohne ALDA

Full-load delivery		Full-load speed regulation	Variations in fuel delivery		Starting fuel delivery		Difference
Test oil temp 40°C (104°F)					Idle		
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes
1	2	3	4	5	6	7	8
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2290-2330)	1600	51,5-53,0 (50,5-54,0)	100	min. 55,0 (52,0)	6,0 (12a)
			1000	51,5-52,5 (50,5-53,5)	365	10,0-11,0 (8,5-12,5)	1,0 (1,5) (15)
					375	5,5-9,5++	(1,5)
					2550	24,0-30,0 (23,0-31,0)	2,5 (3,0) (16)

Checking values in brackets

* 1 mm less control rod travel than in Column 2

Testing with ALDA

Point	min ⁻¹	cm ³ /1000 H	RW	Pressure (absolute)
18	1000	51,5 - 52,5 (50,5 - 53,5)	13,5 - 13,6	1733 mbar(1300 mmHg)
18a	*** 1000	41,0 - 43,0 (40,0 - 44,0)	-	1067 mbar(800 mmHg)
19	2180	50,0 - 52,0 (49,0 - 53,0)	12,1 - 12,3	1733 mbar (1300 mmHg)
12a	100	min. 55	20,5 - 21,5	1733 mbar (1300 mmHg)
15	365	10,0 - 11,0 (8,5 - 12,5)	5,7 - 5,8	986 mbar (740 mmHg)

1. Adjusting the idle

Test supersedes Section 4.1 of test instructions VDT-W-420/300
Suppl. 2, Ed. 2.

Set the control lever to an angle of 69°. Operate the fuel-injection pump at 1000 min⁻¹.

Screw in the spring retainer until a control-rod travel of 13,5 - 13,6 mm is reached.

Set the control lever to an angle of 49°. Operate the fuel-injection pump at 1000 min⁻¹. Control-rod travel 8,8 - 9,5 must be reached.

2. Adjusting the lower rated speed

Text supersedes Section 4.3 of test instructions VDT-W 420/300
Suppl. 2, Ed. 2.

Operate the fuel-injection pump at $n = 800 \text{ min}^{-1}$. Take back the control lever until a control-rod travel of 1.0 - 1.3 mm is reached.

The resulting deflection of the control lever must be within the allowable tolerance. Fix the control lever in this position. Drive the fuel-injection pump at a speed according to Point 2 Section B of the test specification sheet. Set regulation at adjusting screw (28).

3. Adjusting the idle-speed auxiliary spring (70)

- *** Position the idle-speed auxiliary spring in contact as the characteristic curve levels off at $n=520-550 \text{ min}^{-1}$.

4. Adjusting the sensing lever

Place the control lever against the full-load stop.

Operate the fuel-injection pump at $n = 375 \text{ min}^{-1}$. Adjust the sensing lever so that the control-rod travel is 0.1 (0.1 - 0.2) mm above the full-load control-rod travel at $n = 1000 \text{ min}^{-1}$.

5. *** Correct the quantity of fuel injected at the correction screw of the ALDA aneroid box. Max. correction $\pm 0.75 \text{ mm}$ control-rod travel.

6. Pin projection = $16.65 \pm 0.1 \text{ mm}$

7. Shutoff check: Operate the fuel-injection pump at $n = 200 \text{ min}^{-1}$. Force the control rod through the spring-loaded idle stop. The resulting control-rod travel must be max. 5 mm.

8. Test the pneumatic shutoff: Control lever in idle position. Operate the fuel-injection pump at $n = 375 \text{ min}^{-1}$. At 450 mbar (338 mmHg) (vacuum) the control rod must move briskly to control-rod travel 0 mm.

9. Control-lever range idle - full load = $38 - 42^\circ$.

10. Testing and setting of control-rod travel sensor
with evaluation circuit
K5/EES - RWG.00 RBN - 40

Receiving inspection:

Set control lever so that a voltage of 2.1 ± 0.005 V is indicated on the digital voltmeter.

Set engine speed of 1000 1/min; fuel delivery of 27.5 - 28.5 ccm/1000 lifts must be reached.
Control lever at full-load stop (control-rod travel 13.5 - 13.6), voltage value 3.2 ± 0.08 V.

Setting the control-rod travel sensor:

At 1000 1/min set a fuel delivery of 27.5 - 28.5 ccm/1000 lifts with control lever. Move control-rod travel sensor until $U = 2.1 \pm 0.005$ V is indicated (tighten fastening screws to 3 Nm). Control lever at full-load stop (control-rod travel = 13.5 - 13.6); voltage of 3.2 ± 0.04 V must be reached.

11. ** Idle checking point

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,0 k

3. Edition

En

Testoil-ISO 4113

PES 5 MW 55/320 RS 20

RW 375/2200 MW 27 0 420 081 017

1 - 2 - 4 - 5 - 3 = 0 - 72-144-216-288^{±0,5} (0,75)

supersedes 9.79

company Daimler Benz

engine OM 617

Note: Before starting testing, observe the important instructions on the reverse.
see Point 3

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,10-2,20 mm (from BDC) 21,0 mm Control rod travel
(2,05-2,25)

ohne ADA

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (compensating valve) mm
1	2	3	4	2	3	6
1000	13,2 ⁺⁰ ,	3,8 - 3,9	0,25(0,3)			
375	6,6-6,8	0,6 - 0,7	0,1(0,15)			
1600	Abschn. C. Sp. 4-5		0,25(0,3)			
2180	Abschn. C. Sp. 4-5		0,25(0,3)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

ohne ADA

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min	Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min		Rotational speed rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
30	① 11,0 ② 6,6-6,8 ③ ** ④ - ⑤ 2,0	100-300 375 385 - 650-700	67 ^{±2}	⑦ 12,4 ⁺⁰ ,2 ⑧ 11,5 ⑨ 4,0 ⑩ 0-1,0 ⑪ -	2180 2280-2300 2670-2730 2950 -		⑫ 100 ⑬ 1600 ⑭ 1000	20,5-21,5 13,0-13,2 13,2-13,3
							⑥ Switching point 250-300(230-320)	

C. Settings for Fuel Injection Pump with Governor Mounted

ohne ADA

Full-load delivery ⑰		Full-load speed regulation ⑱a	Variations in fuel delivery ⑰		Starting fuel delivery idle ⑱b		Difference cm ³ /1000 strokes	
Test oil temp 40°C (104°F)								
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes	
1	2	3	4	5	6	7	8	
2180	39,0 - 41,0 (38,0 - 42,0)	2280-2300* (2275-2305)	1600	39,0 - 41,0 (38,0 - 42,0)	100	mind. 57	6,0	⑫a
			1000	38,5 - 39,5 (37,5 - 40,5)	375	6,0-7,0 (5,5-7,5)	1,0 (1,5)	⑮
					2550	14,5 - 20,5 (13,5 - 21,5)	2,5 (3,0)	⑯

Checking values in brackets

* 1 mm less control rod travel than in Column 2

1. Testing of sections A, B and C should be done without the ADA aneroid box. When this test has been completed the ADA aneroid box is connected.

Testing the governor with ADA-aneroid box (147)

Engine speed	Setting point	Control-rod travel reduction from full-load control-rod travel
1000 min ⁻¹	840 mbar (630 mm Hg)	1,0 - 1,2 (0,95 - 1,25) mm
	Checking point	
1000 min ⁻¹	907 mbar (680 mm Hg)	0,3 - 0,6 (0,35 - 0,65) mm

2. Pin projection = 16.65 ± 0.05 mm.

3. Adjusting the idle stage

Text replaces section 4.1 of the test instructions.

Set the control lever to 30°.

Operate the fuel-injection pump at $n = 800 \text{ min}^{-1}$.

Screw the spring retainer (torque-control capsule) or the driver with a pin wrench KDEP 1064/1 or a 1/2" hexagon-socket-screw-key so far that a control-rod travel of 1.2 - 1.5 mm is attained.

Further test steps see Test Instructions VDT-W-420/300 En.

4. ++ At this engine speed exceed the control-rod travel by 0.4 ± 0.1 mm. Idle delivery must not be affected.

5. Adjustment angle: Stop...idle = 35°, idle...full load = 39°.

6. Sensing lever adjustment: Set the sensing lever at $n = 375 \text{ min}^{-1}$ (control lever in full-load position). At this speed the control-rod travel must exceed the full-load control-rod travel at $n = 1000 \text{ min}^{-1}$ by 0,1 - 0,3 (0,1-0,4 mm)mm.

7. Check the pneumatic shut-off:

Control lever in idle position. Operate the fuel-injection pump at $n = 375 \text{ min}^{-1}$.

At $p_y = 450 \text{ mbar}$ (338 mm Hg) (vacuum) the control rod must quickly return to control-rod travel 0 mm.

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 12,7 c

5. Edition

En

PE 8 MW 100/720 LS 1010

RQV 300-1250 MW 31

Komb. 0 403 548 003

superseded 1.82

company: KHD

engine: BF 8 L 413 F

235 kW (320 PS)

bei 2500 min

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,10-3,20 mm (from BDO) bei RW = 9,0-12,0 mm
(2,05-3,25)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1250	12,2+0,1	13,0-13,2	0,35(0,6)			
300	6,4-6,6	1,25-1,65	0,35(0,55)			
850	12,7+0,1		0,5 (0,7)			
500	9,7+0,1		0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1250 1500	15,2-17,8 0-1,0				ca. 15	100 300 670-730=2,0	min.8,4 6,8-6,9		
ca. 65	11,2 4,0	1290-1300 1375-1405				380-440				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1250	0,7 bar 130,0-132,0 (128,0-134,0)	1290-1300*	LDA 850	0,7 bar 130,5-134,5 (128,5-136,5)	100	136,5-146,5 (133,5-149,5)	850 1000 1200	12,7+0,1 12,4+0,2 12,2+0,1
			LDA 500	0 bar 84,5-86,5 (82,5-88,5)	300	12,5-16,5 (10,0-19,0)	1250	12,2+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.84

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H11

H11

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

KHD 12,7 c -2-

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
LS 1010 with MW 31	0,7 bar	0,3 0,23	12,7 - 12,8 11,9 - 12,0 10,4 - 10,6

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 OMB 8,1 c 1

4. Edition

En

PES 6 MW 100/720 RS 1012

RQV 425-1100 MW 35

supersedes 12.83

0 403 446 126

company: OM-Brescia

1- 5- 3 - 6 - 2 - 4

engine 8365.25.522

0-60-120-180-240-300 \pm 0,50 (0,75)

122 kW (152 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,90-3,00$
($2,85-3,05$) mm (from BDC) RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,2 \pm 0,1	8,15-8,35	0,35(0,6)			
425	5,8-6,0	1,05-1,45	0,35(0,55)			
700	11,1 \pm 0,1		0,5 (0,7)			
500	10,6 \pm 0,1		0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100 1300	15,2-17,8 0 - 1,0	-	-	-	ca. 14	425 100	5,8-6,0 min. 7,5	425 500 1150	1,8 2,3-2,9 9,0-9,2
ca. 48	9,2 4,0	1140-1150 1185-1215				3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9 \pm 0,1
LDA	0,5 bar		LDA	0,5 bar	100	RW max. 19 min. 160 (min. 157)	700	11,1
1100	81,5-83,5 (79,5-85,5)	1140-1150*	700	84,5-88,5 (82,5-90,5)	425	10,5-14,5 (8,0-17,0)	1000	10,2
			LDA 500	0 bar 67,5-69,5 (65,5-71,5)		100-345 (80-365)		

Checking values in brackets

* 1 mm less control rod travel than col 2

10.84

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

OMB 8,1 c 1 -2-

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
RS 1012 with RQV...MW35	0,25	0,5	10,9 - 11,0
		0	11,1 - 11,2
			10,6 - 10,7

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 OMB 8,1 c

3. Edition

En

PES 6 MW 100/720 RS 1012 RQV 425-1000 MW 36-1

0 403 446 133

supersedes 8.83

company: OM Brescia

8365.25.530

engine: 121,4 kW (165 PS)

1 - 5 - 3 - 6 - 2 - 4
0 - 60 - 120 - 180 - 240 - 300 \pm 0,5 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,90-3,00
(2,85-3,05) mm (from BDC) RW 9 - 12 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,7+0,1	9,1-9,3	0,35(0,6)			
425	6,4-6,5	1,35-1,75	0,55(0,55)			
700	12,6+0,1		0,5(0,7)			
500	11,5+0,1		0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in 

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100 1200	15,2-17,5 0-1,0	-	-	-	ca. 26	425 100	6,4-6,5 min.8,0	425 500 1050	1,8 2,3-3,0 8,6-8,7
ca. 51	10,7 4,0	1040-1050 1120-1150					490-550 = 2,0			

Torque control travel a = 1,1 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control rod stop Test oil temp. 40°C (104°F) rev/min 1		Rotational speed Revolution intermediate speed rev/min 3		Fuel delivery characteristics high idle speed rev/min 4		Starting fuel delivery Idle switching point rev/min 6		Torque-control travel rev/min 8	
cm ³ /1000 strokes 2	cm ³ /1000 strokes 5	cm ³ /1000 strokes 3	cm ³ /1000 strokes 5	cm ³ /1000 strokes 7	cm ³ /1000 strokes 9	cm ³ /1000 strokes 11	cm ³ /1000 strokes 13	Control rod travel mm 10	Control rod travel mm 12
LDA 1000	0,6 bar 91,0-93,0 (89,0-95,0)	1040-1050 *	LDA 700	0,6 bar 100,0-104,0 (98,0-106,0)	100	RW 19-21 160,0-180,0 (157,0-183,0)	500	12,6	
			LDA 500	0 bar 71,5-73,5 (69,5-75,5)	425	13,5-17,5 (11,0-20,0)	700	12,6	
					100-345 (80-365)	800	12,4		
							950	11,7	
							1000	11,7	

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.84



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H15

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

OMB 8,1 c -2-

Pump/governor	Setting	Measurement	Control rod travel ⁽¹⁾
	Gauge pressure = bar	Gauge pressure = bar	mm difference
RS 1012 with RQV-MW 36-1	0,36		12,2 - 12,3
		0,6	12,6 - 12,7
		0	11,5 - 11,6
		0,31	11,8 - 11,9

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 5,5 g

En 2. Edition

Testoil-ISO 4113

PES 6 MW 90/720 RS 1015 RQV 300-1600 MW 49
0 403 446 146

supercedes 11.83
company: IVECO-Fiat
engine: 8062.24.668
140 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,50-2,60$
(2,45-2,65) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	10,4+0,1	7,6 - 7,8	0,35 (0,6)			
375	6,6-6,7	1,0 - 1,4	0,35(0,55)			
1600	10,4+0,1		0,5 (0,7)			
500	8,9-9,0					

Adjust the fuel delivery from each outlet according to the values in .

* Note: Idle adjustment must be made at 375 min/1. The rotational speed $n = 300$ min/1 has been shown on the name plate.

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1640 1900	15,2-17,8 0-1,0				ca. 16	375 100	6,6-6,7 min.9,0		
ca. 63	9,4 4,0	1640-1650 1770-1800				3a	390-880			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
LDA 1000	0,5 bar 76,0-78,0 (74,0-80,0)	1640-1650*	LDA 1600	0,5 bar 82,0-86,0 (80,0-88,0)	200	160,0-180,0 (157,0-183,0)			
			LDA 500	0 bar 42,5-44,5 (40,5-46,5)	375	10,0 - 14,0 (9,0-15,0)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

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H17

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

FIA 5,5 g -2-

Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)	
RS 1015 with RQV...MW 49	0,5		10,4 - 10,5	
		0	8,9 - 9,0	
		0,21	10,0 - 10,1	
		0,18	9,3 - 9,4	

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps **(1A)** and Governors

WPP 001/4 RVI 5,5 a

3. Edition

En

40

Testoil-ISO 4113

PES 6 MW 80/320 RS 1104

RSV 300-1450 MW 2/801

0 403 476 013

supersedes 1.84

RVI

company MD 060212

engine 97,8 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

1,75-1,85

Port closing at prestroke

(1,70-1,90)

mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre tensioning (torque-control valve) mm
1	2	3	4	2	3	6
900	10,4-10,5	5,05-5,25	0,25(0,4)			
300	4,7-4,9	0,85-1,15	0,2(0,35)			
1450	9,4-9,5		0,35 (0,45)			

Adjust the fuel delivery from each outlet according to the values in

Note: Adjust the idle speed
auxiliary spring touching, then
turn back 1/4 turn

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca. 20	300	4,8	900	10,4-10,5
	x = 4,0						250	max. 6,4	1050	10,0-10,2
ca. 58	8,4	1515-1525							1450	9,4-9,5
2a	3,9	1555-1585							1150	9,6-9,8
	0-1,0	1650								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min				5			
rev/min	cm ³ /1000 strokes	3	rev/min	cm ³ /1000 strokes	5	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2		4			6	7	8	9
900	50,5-52,5 (49,5-53,5)	1515-1525*	1425	54,0-56,0 (52,0-58,0)		100	max. 15 mm RW 75,0-85,0 (70,0-90,0)		
						300	8,5-11,5 (7,0-13,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

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①

Test Specifications Fuel Injection Pumps and Governors

① P 001/4 RVI 8,8 K 3

1. Edition

En

PES 6 MW 100/320 RS 1016
RQV 300-1300 MW 25-3
0403 446 144
1- 5- 3- 6- 2- 4
0-60-120-180-240-300 \pm 0,50 (0,75)

supersedes
company RVI
engine M10S 060212
107 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	10,5+0,1	8,25-8,45	0,35 (0,6)			
300	5,7-5,8	0,95-1,35	0,35 (0,55)			
900	10,5+0,1		0,5 (0,7)			
500	9,7-9,8					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1300 1650	15,2-17,8 0 - 1,0				ca. 12	300 200	5,7-5,8 min. 6,9		
ca. 61	9,5 4,0	1360-1370 1475-1505				3a	325-600			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) 2		Rotational-speed limitation intermediate speed rev/min 4a	Fuel delivery characteristics 5a high idle speed 5b		Starting fuel delivery idle switching point 6		Torque-control 5 travel Control rod travel mm 8	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
LDA 1300	0,7 bar 82,5-84,5 (80,5-86,5)	1360-1370*	LDA 900	0,7 bar 79,5-83,5 (77,5-85,5)	100	95,0-105,0 (90,0-110,0)		
			LDA 500	0 bar 54,5-56,5 (52,0-59,0)	300	9,5-13,5 (7,0-16,0)		
					100-220	(80-250)		

Checking values in brackets

* 1 mm less control rod travel than col 2

10.84

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

RVI 8,8 k3 -2-

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 1016 with MW 25-3	0,7		10,5 - 10,6
		0,12	10,1 - 10,2
		0,10	9,8 - 9,9
		0	9,7 - 9,8

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 4,5 K

1. Edition

En

PES 4 MW 100/320 RS 1116

RQV 300-1100 MW 51

0 403 444 108

1- 3- 4 - 2

0-90-180-270 \pm 0,50 (0,75)

supercedes

Volvo-BM

company TD 45-EM

engine 85 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

3,20-3,30
(3,15-3,35)

mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	2,5+0,1	11,6-11,8	0,35(0,6)			
300	5,8-5,9	1,3-1,7	0,35(0,55)			
1000	2,5+0,1		0,55			
700	0,5+0,1					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150 1350	5,2-17,8 0-1,0				ca. 12	800	5,8-5,9		
ca. 52	11,5 4,0	140-1150 200-1230				3a	830-450			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 700	0,75 bar 116,0-118,0 (114,0-120,0)	1140-1150*	LDA 1000	0,75 bar 117,0-121,0 (114,5-123,5)	100 300	130,0-140,0 (127,0-143,0) 13,0-17,0 (10,5-19,5)		
			LDA 700	0 bar 79,0-81,0 (76,5-83,5)	100-230(80-250)			

Checking values in brackets

* 1 mm less control rod travel than col 2

10.84

H22

H22

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 700

rev/min decreasing pressure - in bar gauge pressure
increasing

VOL 4,5 k -2-

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel: diminution difference mm (1)
RS 1116 with MW 51	0,75	0,52 0,26 0	12,5 - 12,6 12,4 - 12,5 10,6 - 10,7 10,5 - 10,6

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 KHD 12,7 t

1. Edition

En

PE 8 MW 100/720 IS 1117
RQ 300/1000 MW 52-1
0 403 548 009

supersedes

company KHD

engine F 8 L 413 F 2
177 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,10-3,20
(3,05-3,25) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
650	11,4+0,1	10,6-10,8	0,35 (0,6)			
300	7,5-7,6	1,1-1,5	0,35 (0,55)			
1150	10,0+0,1		0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7 Control rod travel mm 8		Test specifications rev/min 9 Control rod travel mm 10		Torque control rev/min 11 Control rod travel mm 12	
550	19,2-20,8	550	20,0	9,0	1195-1210	300	7,5	100	min. 9,0	1150	10,0-10,1
				4,0	1240-1270			300	7,5-7,6	650	11,4-11,5
1350	0 - 1,0							350-380	= 2,0	850	10,5-10,8

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	Control rod travel
rev/min	cm ³ /- 1000 strokes	rev/min	rev/min	cm ³ /- 1000 strokes	rev/min	cm ³ /1000 strokes/mm
1	2	3	4	5	6	7
650	106,0-108,0 (104,0-110,0)		1150	96,0-98,0 (93,5-100,5)	100 300 100-230	130,0-140,0 (127,0-143,0) 11,0-15,0 (8,5-17,5) (80-250)

Checking values in brackets

10.84

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H24

H24

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 13,4 a

2. Edition

En

PE 8 MW 100/720 LS 1118
RQV 300-1150 MW 56
0 403 548 007

superse~~de~~ 84
company KHD
engine BF 8 L 513
222 kW

1- 8- 7- 2 - 6 - 5 - 4 - 3
0-45-90-135-180-225-270-315 \pm 0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,10-3,20 mm (from BDC) RW = 9,0-12,0 mm
(3,05-3,25)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	14,2+0,1	13,3-13,5	0,35(0,6)			
300	8,7-8,8	1,6-2,0	0,35(0,55)			
1150	13,6+0,1		0,5 (0,7)			
450	13,2+0,1					

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1175 1400	15,2-17,8 0-1				ca. 22	300	6,7-6,8		
ca. 55	12,6 4,0	1190-1200 1300-1330					320-650			

Torque control travel a = 0,6 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) 2		Rotational-speed limitation intermediate speed 4a	Fuel delivery characteristics high idle speed 5a		Starting fuel delivery idle switching point 8		Torque-control travel 5	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 700	0,8 bar 133,0-135,0 (131,0-137,0)	1190-1200*	LDA 1150	0,8 bar 129,0-131,0 (126,5-133,5)	100	140-150 (137-153)	1000 750 900	3,6+0,1 4,2+0,1 3,8+0,3
			LDA 450	0 bar 104,0-106,0 (101,5-108,5)	300	16,0-20,0 (13,5-22,5)		
					100-230	(80-250)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.84

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J1

J1

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

KHD 13,4 a -2-

Testoil-ISO 4113

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
Pumpe LS 1118 with MW 56	0,8	0,36 0,26 0	14,2 - 14,3 13,9 - 14,0 13,4 - 13,5 13,2 - 13,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

Testoil-ISO 4113

PE 6 P 110 A 720 RS 15 RQ 250/1100 PA 111 DR
Komb.-Nr. 0 401 846 194

supersedes 3.82
company Daimler-Benz
engine OM 355
154 kW (210 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,80-2,90}{(2,75-2,95)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1090	12,0+0,1	10,0 - 10,2	0,3(0,6)			
250	7,9-8,1	1,7 - 2,3	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications rev/min 5	Control rod travel mm 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,5-16,5	600	16,0	11,0 4,0 1300	1135-1150 1210-1240 0 - 1,0	250	6,0	100 250 385-425 = 2,0	mind. 7,0 5,9-6,1	1090 700 450	12,0-12,1 12,3-12,4 12,6-12,7

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: A $1135 - 1150 \text{ min}^{-1}$ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /100 strokes 7
1090	100,0 - 102,0 (98,0 - 104,0)		700 450	96,0 - 99,0 (94,0 - 101,0) 90,0 - 94,0 (88,0 - 96,0)	100	150,0-170,0 (146,0-174,0)

Checking values in brackets

Test Specifications Fuel Injection Pumps and Governors

VDT-WPP 001/4

1. Edition

En

Testoil-ISO 4113

PES 8 P 100 A 921/5 RS 286
.. 920/5 RS 286/34

EP/RSV 350-1050 PO/392 DR
350-1200 PO/394 DR
350-1050 PO/409 DR

supersedes

company: IHC - USA

engine: DVT 800

s. WPP 110/2, 3. Ausgabe I

1 - 8 - 4 - 2 - 7 - 3 - 6 - 5 je 45° I

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1

mm (from BDC)

Checking tolerance + 0,15 - 0,05

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ / 100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	12	11,4 - 12,0	0,4			
600	15	16,2 - 17,8				
200	6	2,9 - 3,9				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

P 0/392 DR

Upper rated speed			Intermediate rated speed			③ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 49	1050	16,0	without auxiliary spring			ca. 26	350	6,0	1030	0
	1150	10,3					150	19 - 21		
	1230	3,9					350	5,7-6,3		
⑤	1050	ca. 9,0	with auxiliary spring				460	0 - 1	450	1,1-1,3
	1150	ca. 3,0								
	1200	0,3 - 1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm ³ /1000 strokes	3	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
1050	69,0 - 71,0	1100-1110*	800	91,0 - 95,0	100	190 - 230			
					350	8 - 11			
			1145	5,0 - 11,0					

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

P 0/394 DR

286 (m. RSV) - 2 -

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 64	1200	16,0	without auxiliary spring			ca. 34	350	6,0	1200	0
	1350	9,4					150	19 - 21		
	1450	3,2					350	5,7-6,3		
ca. 55	1200	ca. 8,6	with auxiliary spring				540	0 - 1	500	0,5-0,7
	1310	ca. 3,0								
	1400	1,0-2,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
1200	65,5 - 67,5	1250-1260*	850	76,5 - 80,5	100	190 - 230			
					350	8 - 11			
			⑥a 1310	5,0 - 17,0					

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

P 0/409 DR

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 45	1050	16,0	without auxiliary spring			ca. 29	350	6,0	1030	0
	1120	11,0					150	19 - 21		
	1190	4,2					350	5,7-6,3		
ca. 44	1050	ca. 9,8	with auxiliary spring				380	3,5-4,8	500	1,3-1,5
	1150	ca. 3,8					420	1,0-2,0		
	1250	1,0-2,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
1050	81,5 - 83,5	1090-1100*	750	103,5 - 107,5	100	190 - 230			
					350	8 - 11			
			1150	5,0 - 17,0					

Checking values in brackets

* 1 mm less control rod travel than col 2

①

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 STE 10,0 C
5. Edition

En

Testoil-ISO 4113

PE 8 P 110 A 221 LS 331 RQV 250-1300 PA 315 DR

1 - 5 - 4 - 8 - 6 - 3 - 7 - 2 je 45°!

supersedes 5.80

company S t e y r

engine: WD 815.60
(320 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1

mm (from BDC)

Checking tolerance + 0,15 -0,05

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 8
1300	13,1-13,2	13,1 - 13,3	0,4			
250	7 - 8	1,0-2,0	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ¹	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 66	1320 1400 1460 1560	15,0-17,6 7,2-12,2 1,0-7,6 0	-	-	-	ca. 10	100 250 400 660	6,2-7,6 4,8-6,1 1,8-3,2 0	200 450 1000 1320	0,5-1,2 2,9-2,5 5,4-5,8 8,3

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b 4a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥	Torque-control travel ⑤ Control rod travel mm		
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1300	0,5 bar 131,0-133,0	1330-1345 *	LDA 1300	bar 112,0-116,0	100	15,0 - 17,0		
(increase by ± 3,0 cm³)								

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

STE 10,0 c -2-

Testoil-'SO 4113

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel: diminution difference mm (1)
331 with 315 DR	0,245	0,14	- 0,1 - 1,2

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 11,4 1 12

1. Edition

En

PES 6 P 110 A 820 LS 442 RQ 300/1100 PA 691-1
Komb.-Nr. 0 402 046 306

supersedes -

company Daimler-Benz

engine OM 407 H

177 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{3,2-3,3}
(3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,3+0,1	12,5-12,7	0,4(0,8)			
300	7,7-7,9	1,3- 1,9	0,4(0,7)			
600	-	C, Sp 4 u. 5	0,6(0,9)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	13,0-14,0	600	13,5	10,3 4,0 1350	1130-1140 1175-1215 0-1,5	300	7,8	100 300 365-4	min.9,4 7,7-7,9 05=2,0	-	-

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At 1130-1140 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes / mm Control rod travel 7
1100	125,0-127,0 (122,5-129,5)	-		600	110,0-114,0 (107,0-117,0)	100	130,0-150,0 (126,0-154,0) ** See page 2

Checking values in brackets

7.84

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**** The controller is equipped with a starting device that depends upon the temperature (TAS).**

Instructions for adjusting the starting flow:

Adjust the starting flow without the TAS with the control-rod plug cap. Then put on the TAS and adjust a control.rod travel of 11.8 - 11.9 mm at room temperature.

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 14,9 c 1

1. Edition

En

PES 8 P 120 A 320 RS 466 RQV 275-1050 PA 665-1

Komb.-Nr. 0 402 048 043

1-8-4-2-7-3-6-5 je $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

Values only apply to test nozzle-and-holder

assembly 1 688 901 019 and fuel-injection test

tubing 1 680 750 067

supersedes

company RVI

engine MIVS 083530

280 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,8-2,9$ (2,75-2,95) mm (from BDC) Port closing mark 13° after port closing cylinder 1

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	9,7-9,8	19,0-19,2	0,5(0,9)			
275	3,3-3,5	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1140	15,2-17,8	-	-	-	ca. 9	200	min. 5,1	275	1,5-1,6
ca. 64	8,7 4,0 1300	1105-1115 1175-1205 0-1,0				280-400	275	3,3-3,5	450	3,4-3,8
									800	5,8-6,0
									1050	7,7

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	4a	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1050	0,7 bar 190,0-192,0 (187,0-195,0)	1105-1115*		LDA 650	0,7 bar 172,0-178,0 (169,0-181,0)	100	135,0-155,0 (131,0-159,0)	-	-
				LDA 500	0 bar 116,0-118,0 (113,0-121,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.84

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D. Adjustment Test for Manifold Pressure Compensator

RVI 14,9 c 1

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel
	Gauge pressure = bar	Gauge pressure = bar	diminution difference mm (1)
PES 8 P..RS 466 + RQV..PA 665-1	0,70	0	9,7-9,8
		0,20	7,8-7,9
		0,16	9,2-9,3
			8,3-8,5

Notes

(1) when n

rev/min and
gauge pressure =

bar (: maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 12,8k

2. Edition

En

Testoil-ISO 4113

PE 8 P 100 A 320 LS 810 RSV 575-1200P1/820

Komb.-Nr. 0 401 878 098

P1A 820

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je $45^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$

supersedes 10.79

company Daimler-Benz

engine OM 402

(147,1kW-200PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,40-3,50$
 $(3,35-3,55)$

mm (from BDC)

Zyl. 8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1180	9,6-9,7	8,6 - 8,8	0,3(0,6)			
575	5,2-5,4	0,5 - 0,9	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 $\alpha = 6,0$	-	-	-	ca. 28	575	5,3	-	-
ca. 54	1215-1225 = 8,6 1245-1260 = 4,0 1350 = 0,3-1,						575 580-640	5,2-5,4 = 2,0		
②a										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery idle		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min							
rev/min 1	cm ³ /100 strokes 2	rev/min 3		rev/min 4	cm ³ /100 strokes 5	rev/min 6	cm ³ /100 strokes 7	rev/min 8	Control rod travel mm 9
1180	86,0 - 88,0 (84,0 - 90,0)	1215-1225*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

9.84

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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 12,8 b 3

1. Edition

En

PE 8 P 100 A 320 LS 810 RQV 300-1250 PA 227 R

Komb.-Nr. 0 401 848 041

supersedes-

company: Daimler-Benz

engine: OM 402

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,4-3,5}{(3,35-3,55)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring/pre-tensioning (torque-control valve) mm 6
1250	10,3+0,1	10,0-10,2	0,3(0,6)			
300	7,4-7,6	1,7-2,3	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1250	15,2-17,8	-	-	-	ca. 12	100	min.9,0	250	0,7-1,0
ca. 66	9,3 4,0 1450	1290-1300 1330-1360 0-1,0					300	7,4-7,6	550	3,3-3,5
							630-690	= 2,0	850	4,7-5,1
									1250	8,0

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1250	100,0-102,0 (98,0-104,0)	1290-1300*	600	75,0-80,0 (72,5-82,5)	100	120,0-140,0 (116,0-144,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Test Specifications

Fuel Injection Pumps (1A)

and Governors

40

WPP 001/4 MB 9,6 b

7. Edition

En

PE 6 P 100 A 320 LS 818 RSV 350-1250 P0/810
Komb.-Nr. 0 401 876 183

1- 6- 3 - 5 - 2 - 4
0-75-120-195-240-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes 12.83
company Daimler-Benz
engine OM 401
141 kW (192 PS) (1)
129 kW (175 PS) (2)

A. Fuel Injection Pump Settings

Port closing at prestroke 3,4-3,5
(3,35-3,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1230	10,3 \pm 0,1	10,2-10,4	0,3(0,6)			
350	7,2-7,4	1,4-2,0	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 34	350	7,3	-	-
ca. 62	9,3	1280-1290					350	7,2-7,4		
2a	4,4	1360-1380					500-550	2,0		
	1400	0,3-1,7						**		

Set idle-speed auxiliary spring at 2 mm control-rod travel.
The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40 C (104 F)		Note changed to) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	10
1230 (1)	102,0-104,0 (100,0-106,0)	1280-1290*	-	-	100	140,0-160,0 (136,0-164,0)	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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9.84

B. Governor Settings

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 63	1250 1350 1450	14,0 8,7 2,8	without auxiliary spring with auxiliary spring			ca. 31	350	5,9	-	-
ca. 60	1250 1360 1430	ca. 10,8 ca. 4,4 0,3-1,0					100 350 450 500	19-21 5,6-6,2 0,9-3,1 0-1,0		
⑤										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full load stop		⑥ Rotational speed limit	③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1230 (2)	93,0-95,0 (91,0-97,0)	1280-1290*	-	-	100	110,0-130,0	-	-
			⑥a					

Checking values in brackets

* 1 mm less control rod travel than col 2

Tested 190 4113

B. Governor Settings

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
⑤										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full load stop		⑥ Rotational speed limit	③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

1A

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 12,8 c 1

2. Edition

PE 8 P 100 A 320 LS 819
Komb.-Nr. 0 401 878 085

RSV 350-1250 P0/810
PQA 810

supersedes
company Daimler-Benz
engine OM 402
256 PS

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,4 - 3,5$
(3,35 - 3,55) mm (from BDC) $2y1. 8$

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre tensioning (torque control valve) mm
1	2	3	4	2	3	6
1230	10,2+0,1	10,0-10,2	0,3(0,6)			
350	7,4-7,6	1,5- 2,1	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 38	350	7,5	-	-
	x "	5,0						**		
ca. 66	9,2	1260-1270					500-560	=2,0		
	5,0	1330-1350								
2a	1450	0,3 - 1,4								

The numbers denote the sequence of the tests Set idle-speed auxiliary spring at 2 mm control-rod travel.

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40 °C (104 °F)		Note changed to) rev/min							
rev/min	cm ³ /1000 strokes			rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel /mm
1	2	3		4	5	6	7	8	9
1230	100,0-102,0 (98,0-104,0)	1260-1270*	-	-	-	100	110,0-130,0 (106,0-134,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

9.84

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Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 12,8 n

4. Edition

En

Testoil-ISO 4113

PE 8 P 100 A 320 LS 819 RSV 350-1250 PO/822
 8 - 7 - 2 - 6 - 3 - 5 - 4 - 1 je 45° ± 0,5° (± 0,75°)
 POA 822
 Komb.-Nr. 0 401 878 107

superseded 7.83
 company Daimler-Benz
 engine OM 402
 165 kW (224 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{3,4 - 3,5}
 (3,35-3,55) mm (from BDC) Zyl. 8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 8
1230	9,6-9,7	8,7 - 8,9	0,3(0,6)			
350	7,5-7,7	2,1 - 2,5	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 31	350	7,6	1230	9,6+0,1
	x = 4,5						**		1050	9,9+0,2
							450-510	= 2,0	850	10,3+0,2
⑤ 52.58	8,6	1270-1280								
	4,0	1330-1345								
	1450	0,3 - 1,4								

** Set idle-speed auxiliary spring at 2 mm control-rod travel.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1230	87,0-89,0 (85,0-91,0)	1270-1280*	800	84,0-88,0 (82,0-90,0)	100	110 - 130	-	-	

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.84

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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 19,1 k

5. Edition

En

PE 12 P 110 A 320 LS 832
Komb.-Nr. 0 401 840 060

RQV 350-1150 PA 476 R

supersedes 12.83

company: Daimler-Benz

engine: OM 404 A

1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12
0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,2-3,3$
(3,15-3,35) mm (from BDC) Zyl. 12; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	12,8±0,1	13,4-13,6	0,4(0,8)			
350	7,4-7,6	1,4-2,0	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 18	100	min. 8,6	300	0,9-1,1
ca. 66	11,8	1185-1195					350	7,0-7,2	580	3,5-3,8
	4,0	1295-1325					615-675 = 2,0		870	5,2-5,5
	1450	0-1,0							1150	7,8

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA	0,7 bar 134,0-136,0 (131,5-138,5)	1185-1195*	LDA 500	0 bar 121,0-123,0 (118,5-125,5)	100	130,0-150,0 (126,0-154,0)	1130	12,8±0,1
			LDA 700	0,7 bar 135,0-139,0 (132,0-142,0)			700	13,1±0,1
							970	13,0±0,1
							1070	12,8±0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.84

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D. Adjustment Test for Manifold Pressure Compensator

MB 19,1 k

- 2 -

Test at n = 500 rev/min decreasing pressure - ih bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 12 P...LS 832 + RQV...PA 476 R	0,70		13,1 - 13,2
		0	12,4 - 12,5
		0,39	12,9 - 13,0
		0,31	12,5 - 12,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

①

Test Specifications

Fuel Injection Pumps ① and Governors

WPP 001/4 MB 16,0 g 1

1. Edition

En

PE 10P100A320 LS 821-1 RQV 350-1250 PA 378-2
Komb.-Nr. 0 401 849 167

supersedes

company Daimler-Benz

engine OM 403

235 kW

1 - 8 - 7 - 6 - 3 - 5 - 1 - 10 - 9 - 4

0 - 27 - 72 - 99 - 144 - 171 - 216 - 243 - 288 - 315 $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,4-3,5$ mm (from BDC)
(3,35-3,55)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1230	10,1+0,1	9,7-9,9	0,3(0,6)			
350	7,4-7,6	1,5-2,1	0,2(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1250	15,2-17,8	-	-	-	ca. 14	100	min. 9,2	300	0,9-1,1
ca. 66	9,1	1290-1300					350	7,6-7,8	620	3,6-3,9
	4,0	1360-1390							930	5,3-5,6
	1500	0-1,0				420-540			1250	8,3

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control rod stop Test oil temp. 40°C (104°F) ②		Rotational speed (2b) limitation intermediate speed	Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery Idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1230	97,0-99,0 (95,0-101,0)	1290-1300*	1230	75,0-77,0 (73,0-79,0) **	100	1300-150,0 (126,0-154,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

** Adjusted at the inner lever of the reduced-delivery stop

9.84

J20

J20

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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 19,1 ml

4. Edition

En

PE 12 P 110 A 320 LS 832

RQV350-1150 PA 493 R

Komb.-Nr. 0 401 840 067

supersedes 283

company Daimler-Benz

engine OM 404 A

386 kW (525 PS)

1 - 5-9- 8 - 3 - 4 - 11- 10- 2 - 6 - 7 - 12

0 - 15-60-75-120-135-180-195-240-255-300-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\begin{matrix} 3,2-3,4 \\ (3,15 \ 3,35) \end{matrix}$ mm (from BDC) Zyl. 12; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	13,1±0,1	14,0-14,2	0,4 (0,8)			
350	7,5-7,7	1,8- 2,4	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel rev/min mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1180	15,2-17,8	-	-	-	ca. 18	100	min. 8,6	300	1,0-1,2
ca. 66	12,1	1185-1195					350	7,0-7,2	600	3,6-3,9
	4,0	1295-1325					690-750=	2,0	850	5,2-5,4
	1450	0 - 1,0							1150	8,2

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational speed ②b limitation intermediate speed	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery Idle switching point: ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1130	0,7 bar 140,0-142,0 (137,0-145,0)	1185-1195*	LDA 500	0 bar 121,0-123,0 (118,0-126,0)	100	130,0-150,0 (126,0-154,0)	-	-
			LDA 1130 **	0,7 bar 99,0-103,0 (96,0-106,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

10.84

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D. Adjustment Test for Manifold Pressure Compensator

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

MB 19,1 m 1

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure - bar	Gauge pressure - bar	mm (1)
Pr. 12 P.. LS 832 + .. PA 493 R	0,70		13,1-13,2
		0	12,3-12,4
		0,40	12,9-13,0
		0,33	12,5-12,7

Notes

(1) when n

rev/min and
gauge pressure

bar (maximum full load control rod travel)

** Adjusted at the inner lever of the reduced-delivery stop

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DEE 7,6 g

1. Edition

En

US-PES 6 P 110 A 720 RS 3083 US-RSV 400-1050 P2/488-1

Komb.-Nr. 9 400 231 175

supersedes -

company John Deere
engine 6466 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,45-3,55
(3,40-3,60) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	11,5-12,1	14,8-15,0	0,4(0,75)			
400	5,9-6,1	1,4-2,0	0,4(0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Control lever deflection in degrees		Lower rated speed		3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	7	8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-	ca.22	400	5,5	1050	11,5-11,6	
	X=						100	min.19,0	700	12,3-12,6	
							400	5,9-6,1	500	9,8- 9,9	
ca.44	10,5	1095-1105					625-685	=2,0			
2a	4,0	1170-1200									
	1300	0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40 °C (104 °F)		Note changed to)				Idle			
rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
LDA 1050 ★★	1,2 bar 147,5-149,5 (144,5-152,5)	1095-1105*	LDA 700 LDA 500	1,2 bar 160,0-166,0 (158,0-168,0) 0 bar 99,0-103,0 (96,0-106,0)	100	160,0-190,0	400	6,0	

Checking values in brackets

* 1 mm less control rod travel than col 2

8.84

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D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure
increasing

DEE 7,6 g

-2-

Pump/governor	Setting	Measurement	Control rod travel
	Gauge pressure " bar	Gauge pressure = bar	diminution difference mm (1)
US-PES6P..RS3083 +US-RSV..P2/486-1	0,50	0,26	11,9-12,0
			10,3-10,7

Notes

(1) when n

rev/min and
gauge pressure

bar (maximum full load control rod travel)

** Setting without a compensating spring retainer at 1 mm contro-rod travel less. Boosting of the full load fuel delivery with the compensating spring retainer to 11.5 mm control-rod travel.

Test Specifications Fuel Injection Pumps ② and Governors

En

PES 6 P 110 A 720 RS 3104

RQ 900 PA 738

Komb.-Nr. 0 402 046 759

supersedes-

company KHD

engine: BF 6 L 413 FR/C

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 2,8-2,9 \\ (2,75-2,95) \end{matrix}$ mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,6+0,1	14,7-14,9	0,4(0,75)			
300	6,7-6,9	1,3-1,9	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Setting point		Setting point		Test specifications		Setting point		Test specifications		Setting point	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	11,6 5,5 1050	900-905 936-945 0-1,0	-	-	-	-	-	-

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

900-905 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	Control rod travel mm 3a	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	Control rod travel mm 7 6
850	147,0-149,0 (144,0-152,0)	-	-	-	-	-	-

Checking values in brackets

9.84

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 11,0 y
2. Edition

En

PE 6 P 110 A 720 RS 3115 RQV 200-1100 PA 468

supersedes 6.83

company Saab Scania

engine DN 11 01

Komb.-Nr. 0 401 846 764

Please note instruc-
tions on sheet 2.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{3,3-3,4} (^{3,25-3,45}) mm (from BDC)						
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 stroke 3	Spring pre-tensioning (torque-control valve) mm 6
600	12,4+0,1	11,9-12,1	0,5(0,8)			3,3 ^{+0,1} (3,0-3,5)
225	5,4-5,6	2,0-2,4	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1120	15,2-17,8	-	-	-	ca. 11	100	min. 6,9	150	0 - 0,3
ca. 61	11,4 4,0 1400	1140-1150 1250-1280 0 - 1,0					225 330-390=2,0	5,4-5,6	470 780 1100	3,6-4,2 5,6-5,8 8,3

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
600	119,0-121,0 (117,0-123,0)	1140-1150 *	1100	119,5-124,5 (117,0-127,0)	100	230,0-280,0 = 20,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.84

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S U P P L E M E N T A R Y I N F O R M A T I O N

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on Aug. 22, 1983
- Start of fuel delivery-engine: 21° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

Test Specifications

Fuel Injection Pumps ^(1A) and Governors

40

WPP 001/4 SCA 11,0 y 1

2. Edition

En

PE 6 P 110 A 720 RS 3115 RSV 350-1100 P 1/481

supersedes 6.83

company Saab-Scania

Komb.-Nr. 0 401 876 728

Please note instructions on sheet 2.

engine DN 1101

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,25-3,45) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	12,4+0,1	11,9-12,1	0,5(0,8)			3,3 [±] 0,1 (3,0-3,5)
350	5,4-5,6	2,0-2,4	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 30	350	5,0	-	-
	X = 5,75									
ca. 66	11,4	1140-1150					350	5,4-5,6		
	4,0	1210-1240					480-540	= 2,0		
2a	1350	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
600	119,0-121,0 (117,0-123,0)	1140-1150*	1100	119,5-124,5 (117,0-127,0)		100	230,0-280 = 20,0-21,0 mm RW	0 -	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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8,84

Testoil-ISO 4113

K4

KV

S U P P L E M E N T A R Y I N F O R M A T I O N

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on Aug. 22, 1983
- Start of fuel delivery-engine: 21° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 14,6 d

5. Edition

En

PE 8 P 110 A 320 LS 3802 RQ 300/1150 PA 187-4
Komb.-Nr. 0 401 848 714

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

See Service Information VDT-I-401/102

supersede 9.83

company: Daimler-Benz

engine: OM 422

184 kW (250 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(3,95-4,15)

4,00-4,10

mm (from BDC Zyl. 8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery * cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery * cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,6+0,1	10,9-11,1	0,4(0,8)	11,6+0,1	11,3-11,5	
300	8,3-8,5	1,1-1,7	0,4(0,7)	8,3-8,5	1,1-1,7	
* with return throttle (1)				* without return throttle (2)		

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Control rod travel mm		Setting point	Test specifications			Setting point	Test specifications				Control rod travel mm
rev/min		rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	
1	2	3	4	5	6	7	8	9	10	11	12
650	13,2-14,0	650	13,6	10,6 4,0 1350	1190-1205 1235-1265 0-1,0	300	7,7	100 300 410-450=2,0	min.9,3 7,6-7,8	-	-

B. Governor Settings

MB 14,6 d

- 2 -

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
650	13,2-14,0	650	14,0	10,6 4,0 1350	1190-1205 1235-1265 0-1,0	300	7,7	100 300 410-450=2,0	min.9,3 7,6-7,8 =2,0	-	-

Torque control travel
on flyweight assembly dimension a

mm

Speed regulation A 1190-1205 min⁻¹

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104 F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm ¹ /1000 strokes	rev/min	cm ¹ /1000 strokes	rev/min	cm ¹ /1000 strokes	rev/min	cm ¹ /1000 strokes / mm
1	2	3	4	5	6	7	Control rod travel
1150 (2)	113,0-115,0 (110,5-117,5)	600	600	94,0-98,0 (91,0-101,0)	100	130,0-150,0 (126,0-154,0)	

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque control travel
on flyweight assembly dimension a

mm

Speed regulation At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104 F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm ¹ /1000 strokes	rev/min	cm ¹ /1000 strokes	rev/min	cm ¹ /1000 strokes	rev/min	cm ¹ /1000 strokes / mm
1	2	3	4	5	6	7	Control rod travel

En Checking values in brackets

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 21,9 f

1. Edition

En

PE 12 P 120 A 320 LS 3825 RQV 350-1050 PA 693

1 - 5 - 9 - 8-3-4-11-10-2-6-7-12

0 - 15 - 60 - 75-120-135-180-195-240-255-300-315° ± 0,5°

Values only apply to test nozzle-and-holder

(± 0,75°)

assembly 1 688 901 019 and fuel-injection test

tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes

company: Daimler-Benz

engine: OM 424 A

A. Fuel Injection Pump Settings

 Port closing at prestroke 4,0-4,1
(3,95-4,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	9,7-9,8	14,8-15,0	0,5(0,9)			
350	4,5-4,7	1,4-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1180	15,2-17,8	-	-	-	ca. 12	100 350	min. 6,2 4,5-4,7	300 550 800 1050	1,0-1,2 3,4-3,6 4,8-5,0 7,1
ca. 58	8,7 4,0 1300	1085-1095 1165-1195 0-1,0				③a				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1050	0,7 bar 148,0-150,0 (145,0-153,0)	1085-1095*	LDA 600	0,7 bar 146,0-152,0 (143,0-155,0)	100	150,0-170,0 (146,0-174,0)	-	-
			LDA 500	0 bar 128,0-130,0 (125,0-133,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.84

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K8

K8

D. Adjustment Test for Manifold Pressure Compensator

MB 21,9 f

- 2 -

Test at n 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure - bar	Gauge pressure - bar	mm (1)
PE 12 P..LS 3825 +RQV..PA 693	0,70	0	9,7-9,8
		0,36	9,3-9,5
		0,32	9,5-9,6
			9,4-9,6

Notes

(1) when n

rev/min and
gauge pressure -

bar (maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 14,2 a 3

4. Edition

En

Testoil-ISO 4113

PE 8 P 120 A 920/4 LS 7002 RQV 250-1000 PA 547

1-2-7-3-4-5-6-8 je $45^\circ \pm 0,5^\circ$ ($\pm 0,75^\circ$)

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 015

supersedes 5.83

company: Scania

engine DS 14 06

Komb.-Nr. 0 402 648 801

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

as FD 141: 5,0 - 5,1 bis FD 052: 4,4 - 4,5
Port closing at prestroke (4,95 - 5,15) mm (from BDC) (4,35 - 4,55)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,2+0,1	18,7 - 18,9	0,6(0,9)			3,3 \pm 0,1 (3,0 - 3,5)
225	4,9-5,1	1,0 - 1,4	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1000	15,2-17,8	-	-	-	ca. 10	100	min. 5,9	200	1,0-1,2
ca. 60	12,2	1040-1050					225	4,4-4,6	470	3,3-3,8
	4,0	1150-1180					310-370	2,0	730	5,1-5,3
	1000	0 - 1,0							1000	7,7

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) 2		Rotational speed limitation intermediate speed 4a	Fuel delivery characteristics high idle speed 5b		Starting fuel delivery idle switching point 6		Torque-control travel 5	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA	0,9 bar	1040-1050*	LDA	0,9 bar	100	240,0-290,0	-	-
700	187,0-189,0 (184,0-192,0)		1000	183,0-191,0 (181,0-193,0)		bei 20,0-21,0 mm RW		
			LDA	0 bar				
			500	137,0-141,0 (135,0-143,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.84

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K10

D. Adjustment Test for Manifold Pressure Compensator

SCA 14,2 a 3

2 -

Test at n = ^{decreasing} ~~XXXXXX~~ pressure - in bar gauge pressure
rev/min ^{increasing}

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod ^{diminution} travel ^{difference} XXXXXX mm (1)
..LS 7002 RQV..PA 547	0,9 bar	0 bar 0,23 bar 0,35 bar	13,2 - 13,3 11,3 - 11,4 11,9 - 12,1 12,8 - 12,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

S U P P L E M E N T A R Y I N F O R M A T I O N

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDI-I-400/116
- For sealing, see VDI-I-400/117
- Test specifications approved by Scania on Aug. 19.8.1983
- Start of fuel delivery-engine: 18° before TDC
- Firing sequence, engine : 1-5-4-2-6-3-7-8

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 70 2,9 - 3,1 mm.

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 14,2 a 1

En

3. Edition

PE 8 P 120 A 920/4 LS 7002 8 RQV 250-1050 PA 547

1 - 2 - 7 - 3 - 4 - 5 - 6 - 8 je 45°⁺0,5°(±0,75°)

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 015

superseded 6.33

company Saab-Scania
DS 1407engine
Omb.-Nr. 0 402 648 802

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

ab FD 141: 5,0-5,1 bis FD 052: 4,4-4,5 mm
Port closing at prestroke (4,95-5,15) mm (from BDC) (4,35-4,55)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,0+0,1	18,3-18,5	0,6(0,9)			3,3 ⁺ 0,1
225	4,4-4,6	1,0-1,4	0,3(0,6)			(3,0-3,5) * *

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1050	15,2-17,8	-	-	-	ca. 10	100	min. 5,9	200	1,0-1,2
ca. 62	12,0 4,0 1350	1090-1100 1195-1225 0-1,0					225 310-370	4,4-4,6 =2,0	500 800 1050	3,9-4,4 5,6-5,8 7,7

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel Control rod travel mm ⑤	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 183,0-185,0 (180,0-188,0)	1090-1100*	LDA 1000	0,9 bar 176,0-184,0 (174,0-186,0)	100	240,0-290,0 =20,0-21,0 mm RW	-	-
			LDA 500	0 bar 137,0-141,0 (135,0-143,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

K12

10.84

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K12

D. Adjustment Test for Manifold Pressure Compensator

SCA 14,2 a 1 -2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
PE 8 P .. LS 7002 +RQV .. PA 547	0,90	0 0,35 0,23	13,0-13,1 11,3-11,4 12,8-12,9 11,9-12,1

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

S U P P L E M E N T A R Y I N F O R M A T I O N

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDI-1-400/116
- For sealing, see VDI-1-400/117
- Test specifications approved by Scania on Aug. 19.8.1983
- Start of fuel delivery-engine: 18° before TDC
- Firing sequence, engine : 1-5-4-2-6-3-7-8

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 70 2,9 - 3,1 mm.

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 SCA 14,2 e

2. Edition

PE 8 P 120 A 920/4 LS 7002-1 RSV 350-1050 P 1/504

En

1-2-7-3-4-5-6-8 je 45° ±0,5° (±0,75°)
Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

superseded by 1.84
company Saab-Scania
DS 14 42
engine
Komb.-Nr. 0 402 678 801

A. Fuel Injection Pump Settings

Please note instructions on sheet 2.

Port closing at prestroke 5,0-5,1
4,95-5,15 mm (from BDC) RW=9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre tensioning (torque-control valve) mm
1	2	3	4	2	3	6
700	13,2±0,1	18,7-18,9	0,6(0,9)			
350	4,4-4,6	1,4-1,8	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
Close	800	0,3-1,0	-	-	-	ca. 30	350	4,0	-	-
	x = 6,0						350	4,4-4,6		
							440-500	= 2,0		
ca. 64	12,2	1090-1100								
2a	4,0	1160-1190								
	1250	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min				Idle			
rev/min	cm ³ /1000 strokes	3	rev/min	cm ³ /1000 strokes	5	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2		4			6	7	8	9
700	187,0-189,0 (184,0-192,0)	1090-1100*	1050	183,0-191,0 (181,0-193,0)		100	240,0-290,0 =20,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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10.84

Test Bench 4113

K14

K14

S U P P L E M E N T A R Y I N F O R M A T I O N

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on Okt. 5, 1983
- Start of fuel delivery-engine: 18° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

Test Specifications Fuel Injection Pumps ② and Governors

PE 8 P 120 A 920/4 LS 7003 RQ 750 PA 528
1 - 2 - 7 - 3 - 4 - 5 - 6 - 8 je $45^\circ \pm 0,5^\circ$ ($\pm 0,75^\circ$)
Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tuhing 1 680 750 015

supersedes 5.83
company Saab-Scania
engine DS 14 41, DSI 14 42
Komb.-Nr. 0 402 648 803

Please note instruc-
tions on sheet 2.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

ab FD 141: 5,0 - 5,1 bis FD 052: 4,4 - 4,5 mm
Port closing at prestroke (4,95-5,15) mm (from BDC) (4,35-4,55)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,8+0,1	18,7-18,9	0,6 (0,9)			3,3 \pm 0,1 (3,0 - 3,5) **

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	11,8 4,0 850	750-755 784-797 0-1,0	-	-	-	-	-	-

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

750 - 755 min⁻¹

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3		rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
700	187,0-189,0 (184,0-192,0)	-		-	-	100	240,0-290,0 = 20,0 - 21,0 mm RW
				High idle speed Dispersion: 4,0 (7,0)			

Checking values in brackets

S U P P L E M E N T A R Y I N F O R M A T I O N

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on Aug. 19, 1983
- Start of fuel delivery-engine: DS 14-18° before TDC; DSI 14-17° before TDC
- Firing sequence, engine : 1-5-4-2-6-3-7-8

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 70 2,9 - 3,1 mm.

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 SCA 14,2 b

3. Edition

En

PE 8 P 120 A 920/4 LS 7003 RQ 900 PA 528

1-2-7-3-4-5-6-8 je 45 ° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

Values only apply to test nozzle-and-holder

assembly 1 688 901 019 and fuel-injection test

tubing 1 680 750 015

supersedes 5.83

company Saab-Scania

DS 14 41, DSI14 42

engine DSI14 43

Komb.-Nr. 0 402 648 804

Please note instructions on sheet 2.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

ab FD 141: 5,0-5,1

bis FD 052:

4,4-4,5

Port closing at prestroke

(4,95-5,15)

mm (from BDC)

(4,35-4,55)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,8 \pm 0,1	18,6-18,8	0,6 (0,9)			3,3 \pm 0,1 (3,0-3,5) ±

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	11,8 4,0 1000	900-905 941-955 0-1,0	-	-	-	-	-	-

Torque-control travel

on flyweight assembly dimension a =

mm

Speed regulation: At

900-905 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
850	186,0-188,0 (183,0-191,0)	-		-	-	100	240,0-290,0 = 20,0-21,0 mm RW
					High idle speed Dispersion: 4,0 (7,0)		

Checking values in brackets

9.84

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KA9

K18

Test ISO 4113

S U P P L E M E N T A R Y I N F O R M A T I O N

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on Aug. 19, 1983
- Start of fuel delivery-engine: DS 14-18° before TDC; DSI 14-17° before TDC
- Firing sequence, engine : 1-5-4-2-6-3-7-8

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 70 2,9 - 3,1 mm.

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 SCA 14,2 b 2

3. Edition

En

PE8P 120A 920/4 LS 7003 R0 1050 PA 528

1-2-7-3-4-5-6-8 je 45° ±0,5° (-0,75°)

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tuhing 1 680 750 015

supersedes 5.83

company Saab-Scania

DS 14 41, DSI 14 43

engine

Komb.-Nr. 0 402 648 805

Please note instructions
on sheet 2.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

ab FD 141 9,0-9,5 Dis FD 052: 4,4-4,5 mm
- Port closing at prestroke (4,95-5,15) mm (from BDC) (4,35-4,55)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,8±0,1	19,9-20,1	0,6(0,9)			3,3 ±0,1 (3,0-3,5) **

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	11,8 4,0 1150	1050-1055 1098-1113 0-1,0	-	-	-	-	-	-

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

1050-1055 mm⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	Control rod travel mm	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
1000	199,0-201,0 (196,0-204,0)	-	-	-	-	100	240,0-290,0 = 20,0-31,0 mm RW
				High idle speed			
				Dispersion:			
				4,0 (7,0)			

Checking values in brackets

K20

9.84

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K20

S U P P L E M E N T A R Y I N F O R M A T I O N

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on Aug. 19, 1983
- Start of fuel delivery-engine: DS 14-18° before TDC; DSI 14-17° before TDC
- Firing sequence, engine : 1-5-4-2-6-3-7-8

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 70 2,9 - 3,1 mm.

Test Specifications Fuel Injection Pumps and Governors

Testoil-ISO 4113

PE 6 P 120 A 720 RS 7004 RQ 750 PA 528

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tuhing 1 680 750 015

supersedes 5.83

company SAAB-SCANIA
engine DS 1143, 44, 45
DSI11 42, 45

Komb.-Nr. 0 402 646 803

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

ab FD 141: 5,00-5,10 bis FD 052: 4,40-4,50
Port closing at prestroke (4,95-5,15) mm (from BDC) (4,35-4,55)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ / 100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
700	12,8±0,1	20,9 - 21,1	0,6 (0,9)			3,3 ± 0,1 ** (3,0-3,5)

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider		Full load speed regulation				Idle speed regulation				Torque control	
Setting point	Test specifications	Setting point	Test specifications	Setting point	Test specifications	Setting point	Test specifications	Setting point	Test specifications	Setting point	Test specifications
rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
-	-	-	-	11,8 4,0 850	750-755 784-797 0 - 1,0	-	-	-	-	-	-

Torque control travel
on flyweight assembly dimension a

mm

Speed regulation At 750-755 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104 F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /100 strokes
1	2	3	4	5	6	7
700	209,0 - 211,0 (206,0 - 214,0)	-	-	-	100	240 - 290 = 20,0-21,0 mm RW
			High idle speed Dispersion: 4,0 (7,0)			

Checking values in brackets

S U P P L E M E N T A R Y I N F O R M A T I O N

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-1-400/116
- For sealing, see VDT-1-400/117
- Test specifications approved by Scania on Aug. 18. 1983
- Start of fuel delivery-engine: DS 11-17° before TDC; DSI 11-16° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 70 2,9 - 3,1 mm.

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 SCA 11,0 v 4

1. Edition

En

PE 6 P 120 A 720 RS 7004 RQ 750 PA 528-1

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 015

supersedes
company SAAB-SCANIA
engine DN 11

Komb.-Nr. 0 402 646 815

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

5,00-5,10

(4,95-5,15)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	10,6+0,1	15,5-15,7	0,6(0,9)			3,3 ± 0,1 ** 3,0-3,5)
** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted to 2,9-3,1 mm.						

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10		Torque control rev/min 11	
	Control rod travel mm 2		Control rod travel mm 4		rev/min 6		Control rod travel mm 8		rev/min 9		Control rod travel mm 12
-	-	-	-	9,6 4,0 850	750-755 773-792 0-1,0	-	-	-	-	-	-

Torque control travel
on flyweight assembly dimension a =

mm

Speed regulation At

750-755 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
	cm ³ /1000 strokes 2		Control rod travel mm 3a		cm ³ /1000 strokes 5		Control rod travel mm 6b
700	155,0-157,0 (152,0-160,0)	-	-	-	High idle speed Dispersion: 4,0 (7,0)	100	240-290 = 20,0-21,0 mm RW

Checking values in brackets

9.84

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K24

Testbench 4115

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 SCA 11,0 v 2

3. Edition

PE 6 P 120 A 720 RS 7004

RQ 900 PA 528

En

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tuhing 1 680 750 015

Please note instruc-
tions on sheet 2.

superseded 5.85

company Saab-Scania

engine DS 11 43, 44, 45

DSI 11 42, 45

Komb.-Nr. 0 402 646 804

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

bis FD 052:

4,4-4,5 mm

Port closing at prestroke

(4,95-5,15)

mm (from BDC)

(4,35-4,55)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,8+0,1	20,7 - 20,9	0,6(0,9)			3,3 ±0,1 (3,0-3,5) **

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Control rod travel mm 2		Full load speed regulation Setting point rev/min 3		Control rod travel mm 4		Test specifications Control rod travel mm 5		rev/min 6		Idle speed regulation Setting point rev/min 7		Control rod travel mm 8		Test specifications Control rod travel mm 9		rev/min 10		Torque control rev/min 11		Control rod travel mm 12	
-	-	-	-	-	-	-	-	11,8 4,0 1000	900-905 941-955 0-1,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Torque-control travel

on flyweight assembly dimension a =

mm

Speed regulation: At

900-905 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6		Control rod travel mm 7	
850	207,0-209,0 (204,0-212,0)	-	-	-	-	100	240,0-290,0 = 20,0-21,0 mm RW		
				High idle speed Dispersion: 4,0 (7,0)					

Checking values in brackets

9.84

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Testoil-SC 4131

L1

L4

S U P P L E M E N T A R Y I N F O R M A T I O N

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on Aug. 18. 1983
- Start of fuel delivery-engine: DS 11-17° before TDC; DSI 11-16° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 70 2,9 - 3,1 mm.

Test Specifications Fuel Injection Pumps and Governors

Testoil-ISO 4113

PE 6 P 120 A 720 RS 7004 RQ 1050 PA 528

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 686 750 015

supersedes 5.83

company Saab-Scania
DS 1143, DSI 11 45
engine
Komb.-Nr. 0 402 646 805

Please note instruc-
tions on sheet 2.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

as FD 141: 5,0-5,1

bis FD 052: 4,4-4,5 mm

Port closing at prestroke

(4,95-5,15)

mm (from BDC)

(4,35-4,55)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1000	12,8±0,1	21,4 - 21,6	0,6 (0,9)			3,3 ± 0,1 (3,0-3,5) ..

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider		Full load speed regulation				Idle speed regulation				Torque control	
Setting point		Test specifications		Test specifications		Setting point		Test specifications		Setting point	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
-	-	-	-	11,8 4,0 1150	1050-1055 1098-1113 0 - 1,0	-	-	-	-	-	-

Torque control travel
on flyweight assembly dimension a

mm

Speed regulation At 1050-1055 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /100 strokes
1	2	3	4	5	6	7
1000	214,0 - 216,0 (211,0 - 219,0)	-	-	-	100	240 - 290 = 20,0 - 21,0 mm RW
			High idle speed Dispersion: 4,0 (7,0)			

Checking values in brackets

S U P P L E M E N T A R Y I N F O R M A T I O N

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on Aug. 18. 1983
- Start of fuel delivery-engine: DS 11-17° before TDC; DSI 11-16° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 70 2,9 - 3,1 mm.

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 11,0 w

2. Edition

En

PE 6 P 120 A 720 RS 7007 RQV 200-1000 PA 539-2

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tuhing 1 680 750 015

supersedes 5.83

company: Scania

engine: DSC 1101

LKW 112

Komb.-Nr. 0 402 646 812

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Please note instruc-
tions on sheet 2.

Test-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke (4,45-4,65) mm (from BDC) = RW 6,0 - 8,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	14,7+0,1	21,0-21,2	0,7(1,0)			3,3 [±] 0,1
225	4,4-4,6	1,4-1,8	0,3(0,6)			(3,0-3,5) **

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1040	15,2-17,8	-	-	-	ca. 10	100 225 310-370 = 2,0	min. 5,9 4,4-4,6	150 430 720 1000	0,5-0,8 3,1-3,6 5,1-5,4 7,9
ca. 62	13,7 4,0 1300	1040-1050 1165-1195 0-1,0				③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed ②b limitation intermediate speed rev/min ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min ④ cm ³ /1000 strokes ⑤		Starting fuel delivery Idle switching point rev/min ⑥ cm ³ /1000 strokes ⑦		Torque-control ⑤ travel rev/min ⑧ Control rod travel mm ⑨	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
LDA 700	0,9 bar 210,0-212,0 (207,0-215,0)	1040-1050 *	LDA 1000	0,9 bar 201,0-209,0 (199,0-211,0) 0 bar 164,0-168,0 (162,0-170,0)	100	240,0-290,0 = 20,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.84

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L5

L5

D. Adjustment Test for Manifold Pressure Compensator

SCA 11,0 w - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE6P..RS 7007 +RQV..PA539-2	0,42	0,90 0 0,30	14,0 - 14,1 14,7 - 14,8 11,8 - 11,9 12,4 - 12,6

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

S U P P L E M E N T A R Y I N F O R M A T I O N

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDI-1-400/116
- For sealing, see VDI-1-400/117
- Test specifications approved by Scania on Aug. 18. 1983
- Start of fuel delivery-engine: 22° before TDC at control-rod travel= 6,0-8,0 mm
- Firing sequence, engine : 1-5-3-6-2-4

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted to 3,0 mm.

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 14,2 d

4. Edition

PE 8 P 120 A 920/4 LS 7008

RQV 200-950 PA 547-1

supersedes 8.83

company Scania

engine DSC 1401

Komb.-Nr. 0 402 648 807

1 - 2 - 7 - 3 - 4 - 5 - 6 - 8 je $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $4,5-4,6$
(4,45-4,65) mm (from BDCRW = 6,0 - 8,0 mm)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	4,2±0,1	20,1-20,3	0,7(1,0)			3,3 ± 0,1
225	4,6-4,8	1,4-1,8	0,3(0,6)			(3,0 - 3,5)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015						★★

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	990	15,2-17,8	-	-	-	ca. 9	100	min. 5,9	150	0,5-0,9
ca. 60	3,2 4,0 250	990-1000 1115-1145 0-1,0					250 310-370 = 2,0	4,4-4,6	420 680 950	3,0-3,5 4,8-5,1 7,4
						③a				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed (2b) limitation intermediate speed (4a)	Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery (6) idle switching point	Torque-control (5) travel Control rod travel mm		
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 201,0-203,0 (198,0-206,0)	990-1000*	LDA 950	0,9 bar 194,0-202,0 (192,0-204,0)	100	250,0-300,0 = 20,0-21,0 mm RW	-	-
			LDA 500	0 bar 156,0-160,0 (154,0-162,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.84

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D. Adjustment Test for Manifold Pressure Compensator

SCA 14,2 d

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel ⁽¹⁾
	Gauge pressure = bar	Gauge pressure = bar	diminution difference mm (1)
PE 8 P..LS 7008 + RQV..PA 547-1	0,90		14,2 - 14,3
		0	11,5 - 11,6
		0,35	13,6 - 13,7
		0,24	12,1 - 12,3

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

S U P P L E M E N T A R Y I N F O R M A T I O N

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on Aug. 18. 1983
- Start of fuel delivery-engine: 22° before TDC at control-rod travel = 6,0-8,0 mm
- Firing sequence, engine : 1-5-3-6-2-4

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted to 3,0 mm.

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 ROL 12,2 c

1. Edition

En

PE 6 P 120 A 720 RS 7012 RQV 250-1000 PA 714
Komb.-Nr. 0 402 646 820
Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes:

company: Rolls Royce

engine: Eagle 3
253 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $5,0-5,1$
(4,95-5,15) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,6+0,1	20,9-21,1	0,6(0,9)			3,3 [±] 0,1
250	4,4-4,6	1,3-1,7	0,3(0,6)			(3,0-3,5)

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1000	15,2-17,8	-	-	-	ca. 10	100	min. 5,9	200	1,0-1,2
ca. 60	12,6	1040-1050					250	4,4-4,6	470	3,4-3,9
	4,0	1160-1190					310-370	2,0	730	5,2-5,4
	1300	0-1,0							1000	7,9

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b ④a	Fuel delivery characteristics high idle speed ⑤a ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 209,0-211,0 (206,0-214,0)	1040-1050*	LDA 1000	0,9 bar 203,0-211,0 (201,0-213,0)	100	240,0-290,0 =20,0-21,0 mm RW	-	-
			LDA 500	0 bar 160,0-164,0 (158,0-166,0)	250	13,0-17,0		

Checking values in brackets

* 1 mm less control rod travel than col 2

8.84

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D. Adjustment Test for Manifold Pressure Compensator

ROL 12,2 c

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure - bar	Gauge pressure - bar	mm (1)
PE 6 P..RS 7012 +RQV..PA 714	0,90	0	13,6-13,7
		0,42	11,6-11,7
		0,29	12,8-12,9
			11,9-12,1

Notes

(1) when n

rev/min and
gauge pressure -

bar (: maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 SCA 11,0 z 1

1. Edition

En

PE 6 P 120 A 720 RS 7013 RSV 350-1100 P 1/481
Komb.-Nr. 9 400 087 310
Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 015

supersedes
Saab-Scania Brasilien
company
D SE 11
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $5,0-5,1$
(4,95-5,15) mm (from BDG) RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
100	15,0+0,1	26,3-26,5	0,6(0,9)			3,3 \pm 0,1
350	5,4-5,6	4,3-4,7	0,3(0,6)			(3,0-3,5)

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 30	350	5,0	-	-
	x = 6,0									
ca. 64	14,0	1040-1050					350	5,4-5,6		
	4,0	1130-1160					480-540	=2,0		
2a	1250	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min	cm ³ /1000 strokes			rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1000	263,0-265,0 (260,0-268,0)	1040-1050*	700	265,0-273,0 (261,0-275,0)	100	300,0-350,0 =20,0- 21,0 mm RW	350	5,5	

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH

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8.84

Testoil-SC 415

L11

L1A

Test specifications

Fuel injection pumps and governors

WPP 001/4 MTU 31.7 g 1

1. Edition

En.

PE 8 ZWM 160 / 100 RS 2001

Komb.-Nr. 0 406 008 023

8- 4- 5- 6 - 3 - 1 - 2 - 7

0-45-90-135-180-225-270-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

Please note instructions on sheet 2.

Replaces -

Firm: MTU

Engine: 8 V 396-03
960 kW

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke $2,5-2,6(2,45-2,65)$ mm (from BDC) Zyl. 8

Rotational speed min ⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm ³ /1000 strokes 3	Difference in fuel delivery cm ³ /1000 strokes 4	Fuel delivery Checking values cm ³ /1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	622-636	20 (30)	619-639	
1000	9,0	220-248	28 (42)	215-253	
300	9,0	104-128	16 (24)	99-133	

Adjust the fuel delivery from each outlet according to the values in

B. Governor settings

Upper rated speed		Control-rod travel		Medium rated speed		Control-rod travel		Lower rated speed		Torque control	
Control lever deflection degrees 1	mm min ⁻¹ 2	Control-rod travel mm min ⁻¹ 3	mm min ⁻¹ 4	Control lever deflection degrees 4	mm min ⁻¹ 5	Control-rod travel mm min ⁻¹ 6	mm min ⁻¹ 7	Control lever deflection degrees 7	mm min ⁻¹ 8	Control-rod travel mm min ⁻¹ 9	Control-rod travel mm min ⁻¹ 10
-	-	-	-	-	-	-	-	-	-	-	-

Torque control travel a = mm

Speed regulation: At

1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed		Fuel-delivery characteristics		Starting fuel delivery	
min ⁻¹ 1	cm ³ /1000 strokes 2	min ⁻¹ 3	cm ³ /1000 strokes 4	min ⁻¹ 5	cm ³ /1000 strokes 6	min ⁻¹ 7	cm ³ /1000 strokes 8
Adjust according to the engine records-					-	-	-

Checking values in brackets

Note:

The fuel-injection pump has a special control rod for the partial cutoff of certain cylinders.

Control-rod travel "0" corresponds to 1.0 mm distance of the control-rod pot from the face-side stop plate.

Test specifications

Fuel injection pumps and governors

WPP 001/4 MTU 47,5 g

1. Edition

En.

PE 12 ZWM 160/100 RS 2003
Komb.-Nr. 0 406 000 008

Replaces -

Firm: MTU

Engine: 12 V 396-03
1440 kW

12- 9- 4- 5- 8 - 11- 2 - 3 - 10- 7 - 6 - 1
0-15-60-75-120-135-180-195-240-255-300-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

Please note instruc-

tions on sheet 2.

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke ^{2,5-2,6} (2,45-2,65) mm (from BDC) Zyl. 12

Rotational speed min ⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm ³ /1000 strokes 3	Difference in fuel delivery cm ³ /1000 strokes 4	Fuel delivery Checking values cm ³ /1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	622-636	20 (30)	619-639	-
1000	9,0	220-248	28 (42)	215-253	
300	9,0	104-128	16 (24)	99-133	

Adjust the fuel delivery from each outlet according to the values in

B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min ⁻¹ 2	Control-rod travel mm min ⁻¹ 3	Control lever deflection degrees 4	mm min ⁻¹ 5	Control-rod travel mm min ⁻¹ 6	Control lever deflection degrees 7	mm min ⁻¹ 8	Control-rod travel mm min ⁻¹ 9	mm min ⁻¹ 10	Control-rod travel mm min ⁻¹ 11
-	-	-	-	-	-	-	-	-	-	-

Torque control travel a = mm

Speed regulation: At

1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min ⁻¹ 1	cm ³ /1000 strokes 2	min ⁻¹ 3	min ⁻¹ 4	cm ³ /1000 strokes 5	min ⁻¹ 6	cm ³ /1000 strokes 7
Adjust according to the engine records-			-	-	-	-

Checking values in brackets

Testoil-ISO 4113

Note:

The fuel-injection pump has a special control rod for the partial cutoff of certain cylinders.

Control-rod travel "0" corresponds to 1.0 mm distance of the control-rod pot from the face-side stop plate.

Test specifications

Fuel injection pumps and governors

WPP 001/4 MTU 23,7 a 1

1. Edition

En.

PE 6 ZWM 160/100 RS 2004
Komb.-Nr. 0 406 006 034

6- 1- 2 - 3 - 4 - 5
0-75-120-195-240-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

Please note instructions on sheet 2.

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Replaces -

Firm: MTU

Engine: 6 V 396-03
720 kW

A. Fuel-injection-pump settings

Port closing at prestroke ^{2,5-2,6}
(2,45-2,65) mm (from BDC) ^{2yl. 6}

Rotational speed min ¹	Control-rod travel mm 2	Fuel delivery Average value cm ³ /1000 strokes 3	Difference in fuel delivery cm ³ /1000 strokes 4	Fuel delivery Checking values cm ³ /1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	622-63 6	20 (30)	61 9-63 9	
1000	9,0	220-24 8	28 (42)	215-25 3	
300	9,0	104-12 8	16 (24)	99-13 3	

Adjust the fuel delivery from each outlet according to the values in

B. Governor settings

Upper rated speed				Medium rated speed				Lower rated speed		Torque control	
Control lever deflection degrees 1	mm min ¹ 2	Control-rod travel mm min ¹ 3		Control lever deflection degrees 4	mm min ¹ 5	Control-rod travel mm min ¹ 6		Control lever deflection degrees 7	mm min ¹ 8	Control-rod travel mm min ¹ 9	Control-rod travel mm min ¹ 11
-	-	-		-	-	-		-	-	-	-

Torque control travel a = mm

Speed regulation: At

1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed		Fuel delivery characteristics		Starting fuel delivery	
min ¹ 1	cm ³ /1000 strokes 2	min ¹ 3		min ¹ 4	cm ³ /1000 strokes 5	min ¹ 6	cm ³ /1000 strokes 7
Adjust according to the engine records-		-		-	-	-	-

Checking values in brackets

Note:

The fuel-injection pump has a special control rod for the partial cutoff of certain cylinders.

Control-rod travel "0" corresponds to 1.0 mm distance of the control-rod pot from the face-side stop plate.

Test specifications

Fuel injection pumps

and governors

WPP 001/4 MTU 47,5 f

1. Edition

En.

PE 12 ZWM 160/100 RS 2005

Komb.-Nr. 0 406 000 009

12- 9- 4- 5- 8 - 11- 2 - 3 - 10- 7 - 6 - 1

0-15-60-75-120-135-180-195-240-255-300-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

Replaces -

Firm: MTU

Engine: 12 V 396-03

1440 kW

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection pump settings

Please note instructions on sheet 2.

Port closing at prestroke (2,45-2,65) mm (from BDE) 1. 12

Rotational speed min ⁻¹	Control-rod travel mm	Fuel delivery Average value cm ³ /1000 strokes	Difference in fuel delivery cm ³ /1000 strokes	Fuel delivery Checking values cm ³ /1000 strokes	Spring pre-tension (torque-control valve)
1	2	3	4	5	
1000	18,0	622-636	20 (30)	619-639	
1000	9,0	220-248	28 (42)	215-253	
300	9,0	104-128	16 (24)	99-133	

Adjust the fuel delivery from each outlet according to the values in

B. Governor settings

Upper rated speed				Medium rated speed				Lower rated speed				Torque control	
Control lever deflection degrees	mm min ⁻¹	Control-rod travel mm	min ⁻¹	Control lever deflection degrees	mm min ⁻¹	Control-rod travel mm	min ⁻¹	Control lever deflection degrees	mm min ⁻¹	Control-rod travel mm	min ⁻¹	Control-rod travel mm	min ⁻¹
1	2	3		4	5	6		7	8	9	10	11	
-	-	-		-	-	-		-	-	-	-	-	

Torque control travel a = mm

Speed regulation: At

1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed		Fuel-delivery characteristics		Starting fuel delivery	
min ⁻¹	cm ³ /1000 strokes	min ⁻¹		min ⁻¹	cm ³ /1000 strokes	min ⁻¹	cm ³ /1000 strokes
1	2	3		4	5	6	7
Adjust according to the engine records-				-	-	-	-

Checking values in brackets

9.84

ISO 4113

Note:

Control-rod travel "0" corresponds to 1.0 mm distance of the control-rod pot from the face-side stop plate.

Test specifications

Fuel injection pumps and governors

WPP 001/4 MTU 31,7 h

1. Edition

En.

PE 8 ZWM 160/100 RS 2006
Komb.-Nr. 0 406 008 018

8- 4- 5- 6 - 3 - 1 - 2 - 7
0-45-90-135-180-225-270-315° ± 0,5° (± 0,75°)

Replaces -

Firm: MTU

Engine: 8 V 396-03
960 kW

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Please note instructions on sheet 2.

Port closing at prestroke ^{2,5-2,6}
(2,45-2,65) mm (from BDG) ^{2yl. 8}

Rotational speed min ' 1	Control-rod travel mm 2	Fuel delivery Average value cm ³ /1000 strokes 3	Difference in fuel delivery cm ³ /1000 strokes 4	Fuel delivery Checking values cm ³ /1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	622-636	20 (30)	619-639	-
1000	9,0	220-248	28 (42)	215-253	
300	9,0	104-128	16 (24)	99-133	

Adjust the fuel delivery from each outlet according to the values in

B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min ' 2	Control-rod travel min ' 3	Control lever deflection degrees 4	min ' 5	Control-rod travel mm 6	Control lever deflection degrees 7	min ' 8	Control-rod travel mm 9	min ' 10	Control-rod travel mm 11
-	-	-	-	-	-	-	-	-	-	-

Torque control travel a = mm

Speed regulation: At

1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min ' 1	cm ³ /1000 strokes 2	min ' 3	min ' 4	cm ³ /1000 strokes 5	min ' 6	cm ³ /1000 strokes 7
Adjust according to the engine records-						

Checking values in brackets

9.84

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Note:

Control-rod travel "0" corresponds to 1.0 mm distance of the control-rod pot from the face-side stop plate.

Test specifications

Fuel injection pumps and governors

WPP 001/4 MTU 63,4 d

1. Edition

En.

PE 8 ZWM 160/100 RS 2007

Komb.-No. 0 406 008 019

8- 1- 2- 4 - 5 - 6 - 3 - 7

0-45-90-135-180-225-270-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

Replaces -

Firm: MTU

Engine: 16 V 396-03

1920 kW

Please note instruc-

tions on sheet 2

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke ^{2,5-2,6}
(2,45-2,65) mm (from BDC) ^{1. 8}

Rotational speed min ' 1	Control-rod travel mm 2	Fuel delivery Average value cm ³ /1000 strokes 3	Difference in fuel delivery cm ³ /1000 strokes 4	Fuel delivery Checking values cm ³ /1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	622-636	20 (30)	619-639	
1000	9,0	220-248	28 (42)	215-253	
300	9,0	104-128	16 (24)	99-133	

Adjust the fuel delivery from each outlet according to the values in

B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min ' 2	Control-rod travel mm min ' 3	Control lever deflection degrees 4	mm min ' 5	Control-rod travel mm 6	Control lever deflection degrees 7	mm min ' 8	Control-rod travel mm 9	mm min ' 10	Control-rod travel mm 11
-	-	-	-	-	-	-	-	-	-	-

Torque control travel a \pm mm

Speed regulation: At

1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed		Fuel-delivery characteristics		Starting fuel delivery	
min ' 1	cm ³ /1000 strokes 2	min ' 3		min ' 4	cm ³ /1000 strokes 5	min ' 6	cm ³ /1000 strokes 7
Adjust according to the engine records-		-		-	-	-	-

Checking values in brackets

Note:

The fuel-injection pump has a special control rod for the partial cutoff of certain cylinders.

Control-rod travel "0" corresponds to 1.0 mm distance of the control-rod pot from the face-side stop plate.